H0500-TMA/REKA

0052279

Thermo Nutech
W.O. No. N9-08-135-7183

Bechtel Hanford Inc.
SDG H0500

Case Narrative

1.0 GENERAL

Bechtel Hanford Inc. Sample Delivery Group H0500 is composed of one water sample designated under SAF No. B99-085 with a Project Designation of: 200 Area Source characterization – 200-CW-1 OU – QC Sa.

The sample was received as stated on the Chain-of-Custody document. Any discrepancies are noted on the TNU Sample Receipt Checklist. The results were transmitted to BHI via facsimile on September 13, 1999.

2.0 ANALYSIS NOTES

2.1 Gross Alpha and Beta Analyses

No problems were encountered during the course of the analyses.

TMA/RICHMOND

SAMPLE DELIVERY GROUP H0500

SAMPLE SUMMARY

SDG 7183
Contact Kevin C. Johnson

Client Hanford
Contract TRB-SBB-207925
Case no SDG-H0500

CLIENT SAMPLE ID	LOCATION	MATRIX	LEVEL	LAB SAMPLE ID	SAF NO	CHAIN OF CUSTODY	COLLECTED
B0W679	200 East	WATER		N908135-01	B99-085	B99-085-01	08/19/99 07:15
Method Blank		WATER		N908135-03	B99-085		
Lab Control Sample		WATER		N908135-02	B99-085		
Duplicate (N908135-01)	200 East	WATER		N908135-04	B99-085		08/19/99 07:15

Lab id TMANC
Protocol Hanford
Version Ver 1.0
Form DVD-CS
Version 3.06
Report date 09/13/99

TMA/RICHMOND

SAMPLE DELIVERY GROUP H0500

QC SUMMARY

SDG 7183
Contact Kevin C. Johnson

Client Hanford
Contract TRB-SBB-207925
Case no SDG-H0500

QC BATCH	CHAIN OF CUSTODY	CLIENT SAMPLE ID	MATRIX	% SOLIDS	SAMPLE AMOUNT	BASIS AMOUNT	DAYS SINCE RECEIVED	DAYS SINCE COLL	LAB SAMPLE ID	DEPARTMENT SAMPLE ID
7183	B99-085-01	B0W679	WATER				08/24/99	5	N908135-01	7183-001
		Method Blank	WATER						N908135-03	7183-003
		Lab Control Sample	WATER						N908135-02	7183-002
		Duplicate (N908135-01)	WATER				08/24/99	5	N908135-04	7183-004

Lab id TMANC
Protocol Hanford
Version Ver 1.0
Form DVD-QS
Version 3.06
Report date 09/13/99

TMA/RICHMOND

SAMPLE DELIVERY GROUP H0500

PREP BATCH SUMMARY

SDG 7183
Contact Kevin C. Johnson

Client Hanford
Contract TRB-SBB-207925
Case no SDG-H0500

TEST	MATRIX	METHOD	PREPARATION BATCH	ERROR 2σ %	PLANCHETS ANALYZED CLIENT	MORE	RE	BLANK	LCS	DUP/ORIG	MS/ORIG	QUALIFIERS
Gas Proportional Counting												
80A	WATER	Gross Alpha in Water	6893-106	20.0	1			1	1	1/1		
80B	WATER	Gross Beta in Water	6893-106	15.0	1			1	1	1/1		

Duplicates and Matrix Spikes are those with original (Client) sample in this Sample Delivery Group.
Blank and LCS planchets are those in the same preparation batch as some Client, Duplicate or Spike sample.

Lab id TMANC
Protocol Hanford
Version Ver 1.0
Form DVD-PBS
Version 3.06
Report date 09/13/99

TMA/RICHMOND

SAMPLE DELIVERY GROUP H0500

WORK SUMMARY

SDG 7183
Contact Kevin C. Johnson

Client Hanford
Contract TRB-SBB-207925
Case no SDG-H0500

CLIENT SAMPLE ID / LOCATION / CUSTODY	SAF No	MATRIX	LAB SAMPLE ID / COLLECTED / RECEIVED	PLANCHET	TEST	SUF-FIX	ANALYZED	REVIEWED	BY	METHOD
B0W679			N908135-01	7183-001	80A/80		09/13/99	09/13/99	NJV	Gross Alpha in Water
200 East		WATER	08/19/99	7183-001	80B/80		09/13/99	09/13/99	NJV	Gross Beta in Water
B99-085-01	B99-085		08/24/99							
Method Blank			N908135-03	7183-003	80A/80		09/13/99	09/13/99	NJV	Gross Alpha in Water
		WATER		7183-003	80B/80		09/13/99	09/13/99	NJV	Gross Beta in Water
	B99-085									
Lab Control Sample			N908135-02	7183-002	80A/80		09/13/99	09/13/99	NJV	Gross Alpha in Water
		WATER		7183-002	80B/80		09/13/99	09/13/99	NJV	Gross Beta in Water
	B99-085									
Duplicate (N908135-01)			N908135-04	7183-004	80A/80		09/13/99	09/13/99	NJV	Gross Alpha in Water
200 East		WATER	08/19/99	7183-004	80B/80		09/13/99	09/13/99	NJV	Gross Beta in Water
	B99-085		08/24/99							

COUNTS OF TESTS BY SAMPLE TYPE

TEST	SAF No	METHOD	REFERENCE	CLIENT	MORE	RE	BLANK	LCS	DUP SPIKE	TOTAL
80A/80	B99-085	Gross Alpha in Water	EPA900.0	1			1	1	1	4
80B/80	B99-085	Gross Beta in Water	EPA900.0	1			1	1	1	4
TOTALS				2			2	2	2	8

Lab id TMANC
Protocol Hanford
Version Ver 1.0
Form DVD-CWS
Version 3.06
Report date 09/13/99

TMA / RICHMOND

SAMPLE DELIVERY GROUP H0500

N908135-03

Method Blank

METHOD BLANK

SDG	7183	Client/Case no	Hanford SDG-H0500
Contact	Kevin C. Johnson	Contract	TRB-SBB-207925
Lab sample id	N908135-03	Client sample id	Method Blank
Dept sample id	7183-003	Material/Matrix	WATER
		SAF No	B99-085

ANALYTE	CAS NO	RESULT pCi/L	2σ ERR (COUNT)	MDA pCi/L	RDL pCi/L	QUALI-FIERS	TEST
Gross Alpha	12587-46-1	0.025	0.46	1.0	3.0	U	80A
Gross Beta	12587-47-2	-0.367	1.3	2.2		U	80B

200 Area Src chctztn 200CW1 OUQC Sa

QC-BLANK #31713

Lab id	TMANC
Protocol	Hanford
Version	Ver 1.0
Form	DVD-DS
Version	3.06
Report date	09/13/99

TMA/RICHMOND

SAMPLE DELIVERY GROUP H0500

N908135-02

Lab Control Sample

LAB CONTROL SAMPLE

SDG 7183
Contact Kevin C. Johnson

Client/Case no Hanford SDG-H0500
Case no TRB-SBB-207925

Lab sample id N908135-02
Dept sample id 7183-002

Client sample id Lab Control Sample
Material/Matrix WATER
SAF No B99-085

ANALYTE	RESULT pCi/L	2σ ERR (COUNT)	MDA pCi/L	RDL pCi/L	QUALI-FIERS	TEST	ADDED pCi/L	2σ ERR pCi/L	REC %	3σ LMTS (TOTAL)	PROTOCOL LIMITS
Gross Alpha	76.6	5.5	1.0	3.0		80A	72.0	2.9	106	66-134	80-120
Gross Beta	80.4	3.8	1.9			80B	83.3	3.3	97	76-124	

200 Area Src chctztn 200CW1 OUQC Sa

QC-LCS #31712

Lab id TMANC
Protocol Hanford
Version Ver 1.0
Form DVD-LCS
Version 3.06
Report date 09/13/99

TMA/RICHMOND

SAMPLE DELIVERY GROUP H0500

N908135-04 B0W679

DUPLICATE

SDG 7183		Client/Case no Hanford	SDG-H0500
Contact Kevin C. Johnson		Case no TRB-SBB-207925	
DUPLICATE	ORIGINAL		
Lab sample id N908135-04	Lab sample id N908135-01	Client sample id B0W679	
Dept sample id 7183-004	Dept sample id 7183-001	Location/Matrix 200 East	WATER
	Received 08/24/99	Collected 08/19/99 07:15	
		Custody/SAF No B99-085-01	B99-085

ANALYTE	DUPLICATE pCi/L	2σ ERR (COUNT)	MDA pCi/L	RDL pCi/L	QUALI-FIERS	TEST	ORIGINAL pCi/L	2σ ERR (COUNT)	MDA pCi/L	QUALI-FIERS	RPD %	3σ PROT TOT LIMIT
Gross Alpha	-0.270	0.43	1.0	3.0	U	80A	0.172	0.38	0.70	U	-	
Gross Beta	-0.404	1.0	1.8		U	80B	-0.013	1.3	2.3	U	-	

200 Area Src chctztn 200CW1 OUQC Sa

QC-DUP#1 31714

Lab id	TMANC
Protocol	Hanford
Version	Ver 1.0
Form	DVD-DUP
Version	3.06
Report date	09/13/99

TMA / RICHMOND

SAMPLE DELIVERY GROUP H0500

N908135-01 B0W679

DATA SHEET

SDG	7183	Client/Case no	Hanford SDG-H0500
Contact	Kevin C. Johnson	Contract	TRB-SBB-207925
Lab sample id	N908135-01	Client sample id	B0W679
Dept sample id	7183-001	Location/Matrix	200 East WATER
Received	08/24/99	Collected	08/19/99 07:15
		Custody/SAF No	B99-085-01 B99-085

ANALYTE	CAS NO	RESULT pCi/L	2σ ERR (COUNT)	MDA pCi/L	RDL pCi/L	QUALI-FIERS	TEST
Gross Alpha	12587-46-1	0.172	0.38	0.70	3.0	U	80A
Gross Beta	12587-47-2	-0.013	1.3	2.3		U	80B

200 Area Src chctztn 200CW1 OUQC Sa

Lab id	TMANC
Protocol	Hanford
Version	Ver 1.0
Form	DVD-DS
Version	3.06
Report date	09/13/99

TMA/RICHMOND

SAMPLE DELIVERY GROUP H0500

METHOD SUMMARY

GROSS ALPHA IN WATER

GAS PROPORTIONAL COUNTING

Test 80A Matrix WATER
SDG 7183
Contact Kevin C. Johnson

Client Hanford
Contract TRB-SBB-207925
Case no SDG-H0500

RESULTS

CLIENT SAMPLE ID	LAB SAMPLE ID	RAW TEST	SUF-FIX	PLANCHET	Gross Alpha
Preparation batch 6893-106					
B0W679	N908135-01	80		7183-001	U
BLK (QC ID=31713)	N908135-03	80		7183-003	U
LCS (QC ID=31712)	N908135-02	80		7183-002	ok
Duplicate (N908135-01)	N908135-04	80		7183-004	- U
Nominal values and limits from method				RDLs (pCi/L)	3.0
200 Area Src chctztn 200CW1 OUQC Sa					

METHOD PERFORMANCE

CLIENT SAMPLE ID	LAB SAMPLE ID	RAW TEST	SUF-FIX	MDA pCi/L	ALIQ L	PREP FAC	DILU-TION	RESID mg	EFF %	COUNT min	FWHM keV	DRIFT KeV	DAYS HELD	PREPARED	ANAL-YZED	DETECTOR
Preparation batch 6893-106	2σ prep error 20.0 % Reference Lab Notebook 6893 pg.106															
B0W679	N908135-01	80		0.70	0.300			2		100			25	09/09/99	09/13	GRB-112
BLK (QC ID=31713)	N908135-03	80		1.0	0.300			37		100				09/09/99	09/13	GRB-114
LCS (QC ID=31712)	N908135-02	80		1.0	0.300			37		100				09/09/99	09/13	GRB-113
Duplicate (N908135-01) (QC ID=31714)	N908135-04	80		1.0	0.300			2		100			25	09/09/99	09/13	GRB-115
Nominal values and limits from method				3.0	0.300			5-150		100			180			

PROCEDURES REFERENCE EPA900.0
EP-120 Gross Alpha and Gross Beta in Environmental Water, rev 2

AVERAGES ± 2 SD FOR 4 SAMPLES
MDA 0.92 ± 0.30
RESIDUE 20 ± 40

Lab id TMANC
Protocol Hanford
Version Ver 1.0
Form DVD-CMS
Version 3.06
Report date 09/13/99

Test 80B Matrix WATER
SDG 7183
Contact Kevin C. Johnson

TMA/RICHMOND

SAMPLE DELIVERY GROUP H0500

METHOD SUMMARY

GROSS BETA IN WATER

GAS PROPORTIONAL COUNTING

Client Hanford
Contract TRB-SBB-207925
Case no SDG-H0500

RESULTS

CLIENT SAMPLE ID	LAB SAMPLE ID	RAW TEST	SUF-FIX	PLANCHET	Gross Beta	
Preparation batch 6893-106						
B0W679	N908135-01	80		7183-001	U	
BLK (QC ID=31713)	N908135-03	80		7183-003	U	
LCS (QC ID=31712)	N908135-02	80		7183-002	ok	
Duplicate (N908135-01)	N908135-04	80		7183-004	-	U
Nominal values and limits from method					RDLs (pCi/L)	
200 Area Src chctztn 200CW1 OUQC Sa						

METHOD PERFORMANCE

CLIENT SAMPLE ID	LAB SAMPLE ID	RAW TEST	SUF-FIX	MDA pCi/L	ALIQ L	PREP FAC	DILU-TION	RESID mg	EFF %	COUNT min	FWHM keV	DRIFT KeV	DAYS HELD	PREPARED	ANAL-YZED	DETECTOR
Preparation batch 6893-106	2σ prep error 15.0 %							Reference Lab Notebook 6893 pg.106								
B0W679	N908135-01	80		2.3	0.300			2		100			25	09/09/99	09/13	GRB-112
BLK (QC ID=31713)	N908135-03	80		2.2	0.300			37		100				09/09/99	09/13	GRB-114
LCS (QC ID=31712)	N908135-02	80		1.9	0.300			37		100				09/09/99	09/13	GRB-113
Duplicate (N908135-01) (QC ID=31714)	N908135-04	80		1.8	0.300			2		100			25	09/09/99	09/13	GRB-115
Nominal values and limits from method					0.300			5-150		100						

PROCEDURES REFERENCE EPA900.0
EP-120 Gross Alpha and Gross Beta in Environmental Water, rev 2

AVERAGES ± 2 SD FOR 4 SAMPLES
MDA 2.0 ± 0.48
RESIDUE 20 ± 40

Lab id TMANC
Protocol Hanford
Version Ver 1.0
Form DVD-CMS
Version 3.06
Report date 09/13/99

SDG 7183
Contact Kevin C. Johnson

REPORT GUIDE

Client Hanford
Contract TRB-SBB-207925
Case no SDG-H0500

SAMPLE SUMMARY

The Sample and QC Summary Reports show all samples, including QC samples, reported in one Sample Delivery Group (SDG).

The Sample Summary Report fully identifies client samples and gives the corresponding lab sample identification. The QC Summary Report shows at the sample level how the lab organized the samples into batches and generated QC samples. The Preparation Batch and Method Summary Reports show this at the analysis level.

The following notes apply to these reports:

* LAB SAMPLE ID is the lab's primary identification for a sample.

* DEPARTMENT SAMPLE ID is an alternate lab id, for example one assigned by a radiochemistry department in a lab.

* CLIENT SAMPLE ID is the client's primary identification for a sample. It includes any sample preparation done by the client that is necessary to identify the sample.

* QC BATCH is a lab assigned code that groups samples to be processed and QCed together. These samples should have similar matrices.

  QC BATCH is not necessarily the same as SDG, which reflects samples received and reported together.

* All Lab Control Samples, Method Blanks, Duplicates and Matrix Spikes are shown that QC any of the samples. Due to possible reanalyses, not all results for all these QC samples may be relevant to the SDG. The Lab Control Sample, Method Blank, Duplicate, Matrix Spike and Method Summary Reports detail these relationships.

Lab id TMANC
Protocol Hanford
Version Ver 1.0
Form DVD-RG
Version 3.06
Report date 09/13/99

SDG 7183
Contact Kevin C. Johnson

REPORT GUIDE

Client Hanford
Contract TRB-SBB-207925
Case no SDG-H0500

PREPARATION BATCH SUMMARY

The Preparation Batch Summary Report shows all preparation batches in one Sample Delivery Group (SDG) with information necessary to check the completeness and consistency of the SDG.

The following notes apply to this report:

* The preparation batches are shown in the same order as the Method Summary Reports are printed.

* Only analyses of planchets relevant to the SDG are included.

* Each preparation batch should have at least one Method Blank and LCS in it to validate client sample results.

* The QUALIFIERS shown are all qualifiers other than U, J, B, L and H that occur on any analysis in the preparation batch. The Method Summary Report has these qualifiers on a per sample basis.

  These qualifiers should be reviewed as follows:

  X Some data has been manually entered or modified. Transcription errors are possible.

  P One or more results are 'preliminary'. The data is not ready for final reporting.

  2 There were two or more results for one analyte on one planchet imported at one time. The results in DVD may not be the same as on the raw data sheets.

  Other lab defined qualifiers may occur. In general, these should be addressed in the SDG narrative.

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Version 3.06
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Contact Kevin C. Johnson

REPORT GUIDE

Client Hanford
Contract TRB-SBB-207925
Case no SDG-H0500

WORK SUMMARY

The Work Summary Report shows all samples, including QC samples, and all relevant analyses in one Sample Delivery Group (SDG). This report is often useful as supporting documentation for an invoice.

The following notes apply to this report:

* TEST is a code for the method used to measure associated analytes. Results and related information for each analyte are on the Data Sheet Report. In special cases, a test code used in the summary data section is not the same as in associated raw data. In this case, both codes are shown on the Work Summary.

* SUFFIX is the lab's code to distinguish multiple analyses (recounts, reworks, reanalyses) of a fraction of the sample. The suffix indicates which result is being reported. An empty suffix normally identifies the first attempt to analyze the sample.

* The LAB SAMPLE ID, TEST and SUFFIX uniquely identify all supporting data for a result. The Method Summary Report for each TEST has method performance data, such as yield, for each lab sample id and suffix and procedures used in the method.

* PLANCHET is an alternate lab identifier for work done for one test. It, combined with the TEST and SUFFIX, may be the best link to raw data.

* For QC samples, only analyses that directly QC some regular sample are shown. The Lab Control Sample, Method Blank, Duplicate, Matrix Spike and Method Summary Reports detail these relationships.

* The SAS (Special Analytical Services) Number is a client or lab assigned code that reflects special processing for samples, such as rapid turn around. Counts of tests done are lists by SAS number since it is likely to affect prices.

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REPORT GUIDE

Client Hanford
Contract TRB-SBB-207925
Case no SDG-H0500

DATA SHEET

The Data Sheet Report shows all results and primary supporting information for one client sample or Method Blank. This report corresponds to both the CLP Inorganics and Organics Data Sheet.

The following notes apply to this report:

* TEST is a code for the method used to measure an analyte. If the TEST is empty, no data is available; the analyte was not analyzed for.

* The LAB SAMPLE ID and TEST uniquely identify work within the Summary Data Section of a Data Package. The Work Summary and Method Summary Reports further identify raw data that underlies this work.

  The Method Summary Report for each TEST has method performance data, such as yield, for each Lab Sample ID and a list of procedures used in the method.

* ERRORs can be labeled TOTAL or COUNT. TOTAL implies a preparation (non-counting method) error has been added, as square root of sum of squares, to the counting error denoted by COUNT. The preparation errors, which may vary by preparation batch, are shown on the Method Summary Report.

* A RESULT can be 'N.R.' (Not Reported). This means the lab did this work but chooses not to report it now, possibly because it was reported at another time.

* When reporting a Method Blank, a RESULT can be 'N.A.' (Not Applicable). This means there is no reported client sample work in the same preparation batch as the Blank's result. This is likely to occur when the Method Blank is associated with reanalyses of selected work for a few samples in the SDG.

The following qualifiers are defined by the DVD system:

U The RESULT is less than the MDA (Minimum Detectable Activity).

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GUIDE, cont.

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DATA SHEET

If the MDA is blank, the ERROR is used as the limit.

J The RESULT is less than the RDL (Required Detection Limit) and no U qualifier is assigned.

B A Method Blank associated with this sample had a result without a U flag and, after correcting for possibly different aliquots, that result is greater than or equal to the MDA for this sample.

Normally, B is not assigned if U is. When method blank subtraction is shown on this report, B flags are assigned based on the unsubtracted values while U's are assigned based on the subtracted ones. Both flags can be assigned in this case.

For each sample result, all Method Blank results in the same preparation batch are compared. The Method Summary Report documents this and other QC relationships.

L Some Lab Control Sample that QC's this sample had a low recovery. The lab can disable assignment of this qualifier.

H Similar to 'L' except the recovery was high.

P The RESULT is 'preliminary'.

X Some data necessary to compute the RESULT, ERROR or MDA was manually entered or modified.

2 There were two or more results available for this analyte. The reported result may not be the same as in the raw data.

Other qualifiers are lab defined. Definitions should be in the SDG narrative.

The following values are underlined to indicate possible problems:

* An MDA is underlined if it is bigger than its RDL.

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GUIDE, cont.

Client Hanford
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DATA SHEET

* An ERROR is underlined if the 1.645 sigma counting error is bigger than both the MDA and the RESULT, implying that the MDA may not be a good estimate of the 'real' minimum detectable activity.

* A negative RESULT is underlined if it is less than the negative of its 2 sigma counting ERROR.

* When reporting a Method Blank, a RESULT is underlined if greater than its MDA. If the MDA is blank, the 2 sigma counting error is used in the comparison.

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Protocol Hanford
Version Ver 1.0
Form DVD-RG
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SDG 7183
Contact Kevin C. Johnson

REPORT GUIDE

Client Hanford
Contract TRB-SBB-207925
Case no SDG-H0500

LAB CONTROL SAMPLE

The Lab Control Sample Report shows all results, recoveries and primary supporting information for one Lab Control Sample.

The following notes apply to this report:

* All fields in common with the Data Sheet Report have similar usage. Refer to its Report Guide for details.

* An amount ADDED is the lab's value for the actual amount spiked into this sample with its ERROR an estimate of the error of this amount.

  An amount added is underlined if its ratio to the corresponding RDL is outside protocol specified limits.

* REC (Recovery) is RESULT divided by ADDED expressed as a percent.

* The first, computed limits for the recovery reflect:

  1. The error of RESULT, including that introduced by rounding the result prior to printing.

     If the limits are labeled (TOTAL), they include preparation error in the result. If labeled (COUNT), they do not.

  2. The error of ADDED.

  3. A lab specified, per analyte bias. The bias changes the center of the computed limits.

* The second limits are protocol defined upper and lower QC limits for the recovery.

* The recovery is underlined if it is outside either of these ranges.

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REPORT GUIDE

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Contract TRB-SBB-207925
Case no SDG-H0500

DUPLICATE

The Duplicate Report shows all results, differences and primary supporting information for one Duplicate and associated Original sample.

The following notes apply to this report:

* All fields in common with the Data Sheet Report have similar usage. This applies both to the Duplicate and Original sample data. Refer to the Data Sheet Report Guide for details.

  If the Duplicate has data for a TEST and the lab did not do this test to the Original, the Original's RESULTs are underlined.

* The RPD (Relative Percent Difference) is the absolute value of the difference of the RESULTs divided by their average expressed as a percent.

  If both RESULTs are less than their MDAs, no RPD is computed and a '-' is printed.

  For an analyte, if the lab did work for both samples but has data for only one, the MDA from the sample with data is used as the other's result in the RPD.

* The first, computed limit is the sum, as square root of sum of squares, of the errors of the results divided by the average result as a percent, hence the relative error of the difference rather than the error of the relative difference. The errors include those introduced by rounding the RESULTs prior to printing.

  If this limit is labeled TOT, it includes the preparation error in the RESULTs. If labeled CNT, it does not.

  This value reported for this limit is at most 999.

* The second limit for the RPD is the larger of:

  1. A fixed percentage specified in the protocol.

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GUIDE, cont.

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DUPLICATE

2. A protocol factor (typically 2) times the average MDA as a percent of the average result. This limit applies when the results are close to the MDAs.

* The RPD is underlined if it is greater than either limit.

* If specified by the lab, the second limit column is replaced by the Difference Error Ratio (DER), which is the absolute value of the difference of the results divided by the quadratic sum of their one sigma errors, the same errors as used in the first limit.

  Except for differences due to rounding, the DER is the same as the RPD divided by the first RPD limit with the limit scaled to 1 sigma.

* The DER is underlined if it is greater than the sigma factor, typically 2 or 3, shown in the header for the first RPD limit.

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REPORT GUIDE

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MATRIX SPIKE

The Matrix Spike Report shows all results, recoveries and primary supporting information for one Matrix Spike and associated Original sample.

The following notes apply to this report:

* All fields in common with the Data Sheet Report have similar usage. This applies both to the Spiked and Original sample data. Refer to the Data Sheet Report Guide for details.

  If the Spike has data for a TEST and the lab did not do this test to the Original, the Original's RESULTs are underlined.

* An amount ADDED is the lab's value for the actual amount spiked into the Spike sample with its ERROR an estimate of the error of this amount.

  An amount is underlined if its ratio to the corresponding RDL is outside protocol specified limits.

* REC (Recovery) is the Spike RESULT minus the Original RESULT divided by ADDED expressed as a percent.

* The first, computed limits for the recovery reflect:

  1. The errors of the two RESULTs, including those introduced by rounding them prior to printing.

     If the limits are labeled (TOTAL), they include preparation error in the result. If labeled (COUNT), they do not.

  2. The error of ADDED.

  3. A lab specified, per analyte bias. The bias changes the center of the computed limits.

* The second limits are protocol defined upper and lower QC limits

Lab id TMANC
Protocol Hanford
Version Ver 1.0
Form DVD-RG
Version 3.06
Report date 09/13/99

SDG 7183
Contact Kevin C. Johnson

GUIDE, cont.

Client Hanford
Contract TRB-SBB-207925
Case no SDG-H0500

MATRIX SPIKE

for the recovery.

These limits are left blank if the Original RESULT is more than a protocol defined factor (typically 4) times ADDED. This is a way of accounting for that when the spike is small compared to the amount in the original sample, the recovery is unreliable.

* The recovery is underlined (out of spec) if it is outside either of these ranges.

Lab id TMANC
Protocol Hanford
Version Ver 1.0
Form DVD-RG
Version 3.06
Report date 09/13/99

SDG 7183
Contact Kevin C. Johnson

REPORT GUIDE

Client Hanford
Contract TRB-SBB-207925
Case no SDG-H0500

METHOD SUMMARY

The Method Summary Report has two tables. One shows up to five results measured using one method. The other has performance data for the method. There is one report for each TEST, as used on the Data Sheet Report.

The following notes apply to this report:

* Each table is subdivided into sections, one for each preparation batch. A preparation batch is a group of aliquots prepared at roughly the same time in one work area of the lab using the same method.

  There should be Lab Control Sample and Method Blank results in each preparation batch since this close correspondence makes the QC meaningful. Depending on lab policy, Duplicates need not occur in each batch since they QC sample dependencies such as matrix effects.

* The RAW TEST column shows the test code used in the raw data to identify a particular analysis if it is different than the test code in the header of the report. This occurs in special cases due to method specific details about how the lab labels work.

  The Lab Sample or Planchet ID combined with the (Raw) Test Code and Suffix uniquely identify the raw data for each analysis.

* If a result is less than both its MDA and RDL, it is replaced by just 'U' on this report. If it is greater than or equal to the RDL but less than the MDA, the result is shown with a 'U' flag.

  The J and X flags are as on the data sheet.

* Non-U results for Method Blanks are underlined to indicate possible contamination of other samples in the preparation batch. The Method Blank Report has supporting data.

* Lab Control Sample and Matrix Spike results are shown as: ok, No data, LOW or HIGH, with the last two underlined. 'No data'

Lab id TMANC
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Version 3.06
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METHOD SUMMARY

means no amount ADDED was specified. 'LOW' and 'HIGH' correspond to when the recovery is underlined on the Lab Control Sample or Matrix Spike Report. See these reports for supporting data.

* Duplicate sample results are shown as: ok, No data, or OUT, with the last two underlined. 'No data' means there was no original sample data found for this duplicate. 'OUT' corresponds to when the RPD is underlined on the Duplicate Report. See this report for supporting data.

* If the MDA column is labeled 'MAX MDA', there was more than one result measured by the reported method and the MDA shown is the largest MDA. If not all these results have the same RDL, the MAX MDA reflects only those results with RDL equal to the smallest one.

  MDAs are underlined if greater than the printed RDL.

* Aliquots are underlined if less than the nominal value specified for the method.

* Prepareation factors are underlined if greater than the nominal value specified for the method.

* Dilution factors are underlined if greater than the nominal value specified for the method.

* Residues are underlined if outside the range specified for the method. Residues are not printed if yields are.

* Yields, which may be gravimetric, radiometric or some type of recovery depending on the method, are underlined if outside the range specified for the method.

* Efficiencies are underlined if outside the range specified for the method. Efficiencies are detector and geometry dependent so this test is only approximate.

SDG 7183
Contact Kevin C. Johnson

GUIDE, cont.

Client Hanford
Contract TRB-SBB-207925
Case no SDG-H0500

METHOD SUMMARY

* Count times are underlined if less than the nominal value specified for the method.

* Resolutions (as FWHM; Full Width at Half Max) are underlined if greater than the method specified limit.

* Tracer drifts are underlined if their absolute values are greater than the method specified limit. Tracer drifts are not printed if percent moistures are.

* Days Held are underlined if greater than the holding time specified in the protocol.

* Analysis dates are underlined if before their planchet's preparation date or, if a limit is specified, too far after it.

For some methods, ratios as percentages and error estimates for them are computed for pairs of results. A ratio column header like '1÷3' means the ratio of the first result column and the third result column.

Ratios are not computed for Lab Control Sample, Method Blank or Matrix Spike results since their matrices are not necessarily similar to client samples'.

The error estimate for a ratio of results from one planchet reflects only counting errors since other errors should be correlated. For a ratio involving different planchets, if QC limits are computed based on total errors, the error for the ratio allows for the preparation errors for the planchets.

The ratio is underlined (out of spec) if the absolute value of its difference from the nominal value is greater than its error estimate. If no nominal value is specified, this test is not done.

For Gross Alpha or Gross Beta results, there may be a column showing the sum of other Alpha or Beta emitters. This sum includes all relevant

Lab id TMANC
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SDG 7183
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Case no SDG-H0500

METHOD SUMMARY

results in the DVD database, whether reported or not. Results in the sum are weighted by a particles/decay value specified by the lab for each relevant analyte. Results less than their MDA are not included. No sums are computed for Lab Control, Method Blank or Matrix Spike samples since their various planchets may not be physically related.

If a ratio of total isotopic to Gross Alpha or Beta is shown, the error for the ratio reflects both the error in the Gross result and the sum, as square root of sum of squares, of the errors in the isotopic results.

For total elemental uranium or thorium results, there may be a column showing the total weight computed from associated isotopic results. Ignoring results less than their MDAs, this is a weighted sum of the isotopic results. The weights depend on the molecular weight and half-life of each isotope so as to convert activities (decays) to weight (atoms).

If a ratio of total computed to measured elemental uranium or thorium is shown, the error for the ratio reflects the errors in all the measurements.

Lab id TMANC
Protocol Hanford
Version Ver 1.0
Form DVD-RG
Version 3.06
Report date 09/13/99

Bechtel Hanford Inc.	CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST	B99-085-01	Page 1 of 1

Collector Doug Bowers	**Company Contact** Chris Cearlock **Telephone No.** 372-9574	**Project Coordinator** TRENT, SJ	**Price Code** 7N **Data Turnaround** 45 Days
Project Designation 200 Area Source characterization - 200-CW-1 OU - QC Sa	**Sampling Location** 200 East	**SAF No.** B99-085	
Ice Chest No. ERC 99 012	**Field Logbook No.** EL-1511	**Method of Shipment** Federal Express	
Shipped To ~~TMA/RECRA~~ BZB 8-19-99	**Offsite Property No.** A990224	**Bill of Lading/Air Bill No.** 4235 7952 8587	
		COA ~~B20CW1 67/6~~ BZB 8-19-99 B20CW1 67/C	

POSSIBLE SAMPLE HAZARDS/REMARKS

Special Handling and/or Storage

Preservation	Cool 4C	H2SO4 to pH <2 Cool 4C	HNO3 to pH <2	HCl to pH <2 Cool 4C	HNO3 to pH <2						
Type of Container	aG	P	P	aGs*	P						
No. of Container(s)	2	2	2	3	3						
Volume	1000mL	1000mL	1000mL	40mL	500mL						
SAMPLE ANALYSIS	Semi-VOA - 8270A (TCL)	See item (1) in Special Instructions.	Gross Alpha; Gross Beta	VOA - 8260A (TCL); VOA - 8260A (Add-On) {1-Propanol, Ethanol}	See item (2) in Special Instructions.						

Sample No.	Matrix *	Sample Date	Sample Time											
B0W679	Water	8-19-99	0715			X								
~~B0W680~~	~~Water~~													
BZB 8-19-99														

CHAIN OF POSSESSION	Sign/Print Names			
Relinquished By	Date/Time	Received By	Date/Time	
Brent Porter	8/19/99 15:00	Refer 1A	8/19/99 15:00	
ROF 1A	82399 1100	SJ Gale	82399 1100	
SJ Gale	82399 1100	FED EX	8-23-99	
Fed Ex	8-24-99 9:00	TMN M. Goldenberg	8-24-99 9:00	

SPECIAL INSTRUCTIONS

See Chain of Custody comments on SAF for special instructions.

(1) NO2/NO3 - 353.1; IC Anions - 300.0 {Chloride, Fluoride, Nitrate, Nitrite, Phosphate, Sulfate}; Ammonia - 350.3; Sulfides - 9030; pH (Water) - 9040

(2) ICP Metals - 6010A (Supertrace) {Arsenic, Barium, Cadmium, Chromium, Copper, Lead, Nickel, Selenium, Silver, Vanadium, Zinc}

COLLECTOR UNAVAILABLE TO SIGN COC.

From non rad area

Matrix *

Soil
Water
Vapor
Other Solid
Other Liquid

LABORATORY SECTION	Received By	Title	Date/Time
FINAL SAMPLE DISPOSITION	Disposal Method	Disposed By	Date/Time

Thermo NUtech - Richmond

SAMPLE RECEIPT CHECKLIST

SAMPLE RECEIPT

Client: Bechtel Hanford Inc Date/Time received 8-24-99 9:00

CoC No. B99-078-31,32,36,37,38 B99-085-01 (2 pgs)

Container I.D. No. _____ Requested TAT (Days) 45 P.O. Received Yes [ ] No [✓]

INSPECTION

1.	Custody seals on shipping container intact?	Yes [✓]	No [ ]	N/A [ ]
2.	Custody seals on shipping container dated & signed?	Yes [✓]	No [ ]	N/A [ ]
3.	Custody seals on sample containers intact?	Yes [✓]	No [ ]	N/A [ ]
4.	Custody seals on sample containers dated & signed?	Yes [✓]	No [ ]	N/A [ ]
5.	Cooler Temperature: _____	Packing material is:	Wet [ ]	Dry [✓]
6.	Number of samples in shipping container: 10			
7.	Number of containers per sample: _____ (Or see CoC ✓)			
8.	Paperwork agrees with samples?	Yes [ ]	No [ ]	
9.	Samples have: Tape [ ] Hazard labels [ ] Rad labels [ ] Appropriate sample labels [ ]			
10.	Samples are: In good condition [✓] Leaking [ ] Broken Container [ ] Missing [ ]			
11.	Describe any anomalies: _____			
13.	Was P.M. notified of any anomalies? Yes [ ] No [ ] Date _____			
14.	Received by M. Goldenberg Date: 8-24-99 Time: 9:00			

LOGIN

TNU W.O. No. _____ Group No. _____ Client W.O. No. _____

PROGRAM MANAGER

Sample holding times exceeded? Yes [ ] No [ ]

Client Notified: Name _____ Date/time _____

RADIOACTIVE SHIPMENT RECORD

105416 3. Page 1 of 2

1. SHIP FROM U.S. DEPT. OF ENERGY c/o

Company: Bechtel Hanford Inc.
Address: 3728 Building, 300-Area
City, State, Zip: Richland, WA 99352
Contact: David St. John
Phone: 1-509-372-9588

Ship: [X] Prepaid [ ] Collect 4.

Via: [ ] Motor [X] Air Psgr [ ] UPS [ ] Rail [ ] Air Cargo [ ] Site Carrier

SHIPMENT AUTHORIZATION NUMBER ______

2. SHIP TO

Company: Thermo Retec
Address: 2030 Wright Avenue
City, State, Zip: Richmond, CA 94804
Attention: Larry Johnsen
Phone: 1-510-235-2633

Markings Applied 6.
- Radioactive - LSA [ ]
- Radioactive - SCO [ ]
- Type A [ ]
- Type B with trefoil [ ]

LSA Description 8.
- LSA-I [ ]
- LSA-II [ ]
- LSA-III [ ]
- SCO-I [ ]
- SCO-II [ ]

Labels Applied 10.
- Empty [ ]
- Radioactive White - I [ ]
- Radioactive Yellow - II [ ]
- Radioactive Yellow - III [ ]
- Subsidiary Hazard [ ]

For Normal Form only 7.
Identify
Physical Form [ ] Liquid [ ] Gas [X] Solid Soil
Chemical Form [X] Elemental [ ] Metal [ ] Nitrate [ ] Oxide [ ] Mixture [ ] Other

EMERGENCY RESPONSE 9.
Telephone # 1-888-766-0771
Emergency Response Guide(s) # 161

- Highway Route Controlled Quantity [ ]
- Exclusive Use Shipment with instructions [ ]
- Placards Applied [ ]
- If Rail Specify: ______
- Fissile Excepted, Grams ______ [ ]
- Excepted Package Statement [X]

5. HM Proper Shipping Name: ______ Radioactive Material,

HM	Description	Class	UN No.
[ ]	excepted package - empty packaging	7	UN2910
[ ]	excepted package - instruments or articles	7	UN2910
X	excepted package - limited quantity of material	7	UN2910
[ ]	excepted package - articles manufactured from natural or depleted uranium or natural thorium	7	UN2910
[ ]	Special Form, n.o.s.	7	UN2974
[ ]	Low Specific Activity, n.o.s.	7	UN2912
[ ]	n.o.s.	7	UN2982
[ ]	Fissile, n.o.s.	7	UN2918
[ ]	Surface Contaminated Object	7	UN2913

Warning -- Fissile Material Controlled Shipment. Do Not Load More Than N/A Packages Per Vehicle. In Loading and Storage Areas, Keep at Least 20 Feet From Other Packages Bearing Radioactive Labels.

11.

No. Pkg.	Model Package	COC/Spec.	Serial No.	Seal No.	Isotopes	T.I.	TBq/Package	Gr. Wt. Kgs
[redacted] 1	poly cooler	strong tight	ERC-99-023	tape	Cs-137	N/A	8.2x10-7	7Kg

Glass sample containers wrapped in bubble wrap and in double poly bags packed in absorbing material. 4000 gms total

(Shipper may describe package in detail on one of the unused lines above) 18 bottles total TOTALS N/A 8.2x10-7 7Kg

12. This is to certify that the above named materials are properly classified, described, packaged, marked and labeled, and are in proper condition for transportation according to the applicable regulations of the Department of Transportation.

Certifier's Signature On behalf of DOE-RL: [signature] | Date: 8/23/99 | Organization: ERC-AFS | Complete Cost Code (Inc. End Function): R20CW1-67IC

13.

Surface Dose Rate of Package: [X] <0.005 or ______ mSv/hr; <0.5 or ______ mrem/hr (N+ß γ)

Dose Rate @ 1 Meter from Surface of Package: [X] <0.005 or ______ mSv/hr; <0.5 or ______ mrem/hr (N+ß γ)

Smears of Outer Container: [X] <0.41 Bq (22 dpm) ß γ /cm^2; [X] <0.04 Bq (2.2 dpm) α /cm^2; [ ] <Tbl. 2-2 HSRCM Onsite Limits

TRUCK LOAD OR EXCLUSIVE USE: Surface [X] <2 mSv/hr (200 mrem/hr); @ 2 meters [X] <0.1 mSv/hr (10 mrem/hr); @ Cab or sleeper [X] <0.02 mSv/hr (2 mrem/hr) (Using N+ß γ)

Additional Data and Instructions (inc. Readings on Internal Packaging)

Signature - Radiation Monitoring: [signature] | Bldg. 3728 | Survey No. AF-2-99-1273 | Date 8/23/99

14. TRANSPORTER — Vehicle Number: 463-30345 | DRIVER SIGNATURE: [signature]
RECEIVER — RECEIVER SIGNATURE | Date

15. OFFSITE AUTHORIZATION
Shipment has been inspected and verified to be in compliance with DOT regulations
Authorized Signature: [signature] | Printed Name: Keith R. Smith | Date 8-23-99

16. AUTHORIZATION FOR SHIPMENT
AIR TRANSPORT CERTIFICATION [ ] N/A
CARGO AIRCRAFT: [ ] Cargo Aircraft Only Labels Applied
PASSENGER AIRCRAFT: [X] Ltd Qty [ ] <3 T.I. [X] Research/Medical Diagnosis [ ] Human Medical Research
Pkg. Dimensions (cm)

17. OFFSITE AUTHORIZATION
Tracking No.: KMBH 3655 | Date Shipped: 8/23/99 | Routing: FED-X | ETA: 8/24/99
Surveyed By: [signature] | Date: 8-23-99 | Approved for Shipment Offsite: Greg O. Bonen for | Date: 8/23/99

54-6000-088 (06/97)

RECRA
ENVIRONMENTAL
INC.

Chemical and Environmental Measurement Information

Recra LabNet Philadelphia
Analytical Report

Client: TNU HANFORD B99-085
RFW #: 9908L851
SDG/SAF#: H0500/B99-085

W.O. #: #: 10985-001-001-9999-00
Date Received: 08-24-99

GC SCAN

The set of samples consisted of two (2) water samples collected on 08-19-99.

The samples and their associated QC samples were prepared on 09-02-99 and analyzed by methodology based on EPA Method 8015B for Ethanol and Butanol on 09-02-99.

The following is a summary of the QC results accompanying these sample results and a description of any problems encountered during their analyses:

1. The samples were packaged and stored as specified in the method protocol; the cooler temperature upon receipt has been recorded on the chain-of-custody.

2. The required holding time for analysis was met.

3. All initial calibrations associated with this data set were within acceptance criteria.

4. Continuing calibration criteria (±15%) were exceeded for the continuing calibration verification standard analyzed prior to the sample extracts. Outlying standard(s) generally exhibited increased instrument response. However sample data were not impacted as target analytes were not detected in the associated samples analyzed immediately after such standard(s). A copy of the Sample Discrepancy Report (SDR) has been enclosed in the data package.

5. Surrogates were not used for this analysis.

6. The blank spike recovery was within advisory control limits of 50%-150%.

7. All matrix spike recoveries were within advisory control limits of 50%-150%.

Pat E

J. Michael Taylor
Vice President
Philadelphia Analytical Laboratory

9-20-99
Date

r:\share\lc\gcscan\08-851.doc

208 Welsh Pool Road • Lionville, PA 19341-1333 • (610) 280-3000 • Fax (610) 280-3041

GLOSSARY OF OGCSC DATA

DATA QUALIFIERS

U = Indicates that the compound was analyzed for but not detected. The minimum detection limit for the sample (not the method detection limit) is reported with the U (e.g., 10U).

J = Indicates an estimated value. This flag is used in cases where a target analyte is detected at a level less than the lower quantification level. If the limit of quantification is 10 ug/L and a concentration of 3 ug/L is calculated, it is reported as 3J.

B = This flag is used when the analyte is found in the associated blank as well as in the sample. It indicates possible/probable blank contamination.

E = Indicates that the compound was detected beyond the calibration range and was subsequently analyzed at a dilution.

I = Interference.

ABBREVIATIONS

BS = Indicates blank spike in which reagent grade water is spiked with the CLP matrix spiking solutions and carried through all the steps in the method. Spike recoveries are reported.

BSD = Indicates blank spike duplicate.

MS = Indicates matrix spike.

MSD = Indicates matrix spike duplicate.

DL = Indicates that recoveries were not obtained because the extract had to be diluted for analysis.

NA = Not Applicable.

DF = Dilution Factor.

NR = Not Required.

SP = Indicates spiked compound.

Recra LabNet Philadelphia Sample Discrepancy Report (SDR)

SDR #: [illegible]

Initiator: C Schnell
Date: 9/16/99
Client: TNU-Hanford

RFW Batch: 9908L821 9908L851 9908L880 9908L931 9908L886 9908L953
Samples: 9909L006
Method: SW846/MCAWW/CLP/

Parameter: OGCSC
Matrix:
Prep Batch: Multiple

1. Reason for SDR

a. COC Discrepancy __ Tech Profile Error __ Client Request __ Sampler Error on C-O-C __ Transcription Error __ Wrong Test Code __ Other _____

b. General Discrepancy

__ Missing Sample/Extract __ Container Broken __ Wrong Sample Pulled __ Label ID's Illegible
__ Hold Time Exceeded __ Insufficient Sample __ Preservation Wrong __ Received Past Hold
__ Improper Bottle Type __ Not Amenable to Analysis

Note: Verified by [Log-In] or [Prep Group] (circle)...signature/date: _____

c. QC Problem (Include all relevant specific results; attach data if necessary)

CCV response somewhat erratic during sample analysis, most being high. In cases whereby instrument response decreased, the decrease did not exceed -20% Deviation.

2. Known or Probable Causes(s)

- Heavy analysis load combined with aqueous matrix contributes to reduced stability of instrument response compared to solvent type matrices.

3. Discussion and Proposed Action

__ Re-log
__ Entire Batch
__ Following Samples: _____
__ Re-leach
__ Re-extract
__ Re-digest
__ Revise EDD
__ Change Test Code to _____
__ Place On/Take Off Hold (circle)

Other Description:

- No positives found in any samples.
- The laboratory limit of ±15% Deviation is derived from common analyses and may not be applicable to extended runs of aqueous samples, where such criteria may not be readily achievable.

4. Project Manager Instructions...signature/date: Melanie G. Johnson 9/16/99

__ Concur with Proposed Action
__ Disagree with Proposed Action; See Instruction
__ Include in Case Narrative
__ Client Contacted:
Date/Person _____
__ Add
__ Cancel

5. Final Action...signature/date: [signature] 9/16/99

Other Explanation:

__ Verified re-[log][leach][extract][digest][analysis] (circle)
__ Included in Case Narrative
__ Hard Copy COC Revised
__ Electronic COC Revised
__ EDD Corrections Completed

When Final Action has been recorded, forward original to QA Specialist for distribution and filing.

Route	Distribution of Completed SDR	Route	Distribution of Completed SDR
2	X Initiator	__	__ Metals: Doughty
	X Lab Manager: M. Taylor	__	__ Inorganic: Perrone
1	X Project Mgr: Stone/Carey/Schrenkel/Johnson	__	__ GC/LC: Schnell
	X Section Mgr: Wesson/Daniels	__	__ MS: LeMin/Taylor
4	X QA (file): Racioppi	__	__ Log-in: Toder
3	__ Data Management: Feldman	__	__ Admin: Soos
__	__ Sample Prep: Schnell/Doughty/Kauffman	__	__ Other: _____

L-WI-006/E-03/99

003

	Cust ID:	B0W679	B0W679	B0W679	B0W680	BLK	BLK BS
Sample Information	RFW#:	001	001 MS	001 MSD	002	99LLC132-MB1	99LLC132-MB1
	Matrix:	WATER	WATER	WATER	WATER	WATER	WATER
	D.F.:	1.00	1.00	1.00	1.00	1.00	1.00
	Units:	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L
n-Propyl Alcohol		5.0 U	98 %	97 %	5.0 U	5.0 U	94 %
Ethanol		5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U

09/14/99

U= Analyzed, not detected. J= Present below detection limit. B= Present in blank. NR= Not requested. NS= Not spiked.
%= Percent recovery. D= Diluted out. I= Interference. NA= Not Applicable. *= Outside of Advisory limits.

Recra LabNet - Lionville Laboratory
GCSC ANALYTICAL DATA PACKAGE FOR
TNU-HANFORD B99-085

DATE RECEIVED: 08/24/99 RFW LOT # :9908L851

CLIENT ID	RFW #	MTX	PREP #	COLLECTION	EXTR/PREP	ANALYSIS
B0W679	001	W	99LLC132	08/19/99	09/02/99	09/02/99
B0W679	001 MS	W	99LLC132	08/19/99	09/02/99	09/02/99
B0W679	001 MSD	W	99LLC132	08/19/99	09/02/99	09/02/99
B0W680	002	W	99LLC132	08/19/99	09/02/99	09/02/99
LAB QC:						
BLK	MB1	W	99LLC132	N/A	09/02/99	09/02/99
BLK	MB1 BS	W	99LLC132	N/A	09/02/99	09/02/99

09/13/99

RECRA LabNet Use Only: 9908L851

Custody Transfer Record/Lab Work Request

Page 1 of 1

RECRA LabNet

ALL FIELD PERSONNEL: COMPLETE ONLY SHADED AREAS

(8) ~~perrone~~ ~~wet lab~~ metals dig.

006

Client: TNU-Hanford B99-085
Est. Final Proj. Sampling Date:
Project #: 10985-001-001-9999-00
Project Contact/Phone #:
RECRA Project Manager: AJ
QC: spec Del: std TAT: 30 day
Date Rec'd: 8/24/99 Date Due: 9/23/99
Account #:

Refrigerator #		1	6							6
#/Type Container	Liquid	3g	2g							2p
	Solid									
Volume	Liquid	40	Ltr		W/VOA					Ltr
	Solid									
Preservatives		HCl	-							HNO3
ANALYSES REQUESTED		ORGANIC: VOA	BNA	Pest/PCB	Herb			INORG: Metal	CN	
RECRA LabNet Use Only		0224H	0225H			05C5C		Met(1)	Ang(1)	1N3N8 / 1NH3N

MATRIX CODES: S - Soil; SE - Sediment; SO - Solid; SL - Sludge; W - Water; O - Oil; A - Air; DS - Drum Solids; DL - Drum Liquids; L - EP/TCLP Leachate; WI - Wipe; X - Other; F - Fish

Lab ID	Client ID/Description	MS	MSD	Matrix	Date Collected	Time Collected	0224H	0225H	05C5C	Met(1)	Ang(1)	1N3N8 / 1NH3N
001	BØW679			W	8/19/99	0715	✓	✓	✓	✓	(✓)	✓
002	BØW680			W	↓	0510	✓					

Run Matrix QC

Special Instructions:
saf # B99-085
8/27/99 added Be to metals per client

COMPOSITE WASTE

DATE/REVISIONS:
Logged 8/26/99 - run from pres. bottle
Ang (1) = (ICCL, ICFL, ICNO2, ICNO3, ICPO4)
→ 2. ICSO4, ISFD, IPH - not logged
3. improperly preserved bottle.
Met (1) = As, Ba, Cd, Cr, Cu, Pb, Ni, Se,
5. Ag, U, Zn, Be
* 6. 493579528602

RECRA LabNet Use Only
Samples were: 1) Shipped ✓ or Hand Delivered
Airbill # *
2) Ambient or (Chilled)
3) Received in Good Condition (Y) or N
4) Labels Indicate Properly Preserved Y or (N)
5) Received Within Holding Times Y or (N)

COC Tape was:
1) Present on Outer Package (Y) or N
2) Unbroken on Outer Package (Y) or N
3) Present on Sample (Y) or N
4) Unbroken on Sample (Y) or N
COC Record Present Upon Sample Rec't (Y) or N
Cooler Temp. 3.7 °C

Relinquished by	Received by	Date	Time
FedEx	Janson	8/24/99	0930

Relinquished by	Received by	Date	Time
	REWRITTEN		
	ORIGINAL		

Discrepancies Between Samples Labels and COC Record? Y or (N)
NOTES:

ICNO2, ICNO3, ICPO4, IPH out

Bechtel Hanford Inc.	851	CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST	B99-085-01	Page 1 of 1

Collector: Doug Bowers	Company Contact: Chris Cearlock	Telephone No.: 372-9574	Project Coordinator: TRENT, SJ	Price Code: 7N	Data Turnaround: 45 Days
Project Designation: 200 Area Source characterization - 200-CW-1 OU - QC Sa	Sampling Location: 200 East		SAF No.: B99-085		
Ice Chest No.: 96 006	Field Logbook No.: EL-1511		Method of Shipment: Federal Express		
Shipped To: ~~TMA~~/RECRA 8-19-99	Offsite Property No.: A990223		Bill of Lading/Air Bill No.: 423579528602 -3.7		
			COA: B20CW1 671C		

POSSIBLE SAMPLE HAZARDS/REMARKS	Preservation	Cool 4C	H2SO4 to pH <2 Cool 4C	HNO3 to pH <2	HCl to pH <2 Cool 4C	HNO3 to pH <2					
	Type of Container	aG	P	P	aGs*	P					
	No. of Container(s)	2	2	2	3	3					
Special Handling and/or Storage	Volume	1000mL	1000mL	1000mL	40mL	500mL					
SAMPLE ANALYSIS		Semi-VOA - 8270A (TCL)	See item (1) in Special Instructions	Gross Alpha; Gross Beta	VOA - 8260A (TCL); VOA - 8260A (Add-On) {1-Propanol, Ethanol}	See item (2) in Special Instructions					

Sample No.	Matrix *	Sample Date	Sample Time									
B0W679	Water	8-19-99	0715	X	X		X	X				
B0W680	Water	8-19-99	0510				X					

CHAIN OF POSSESSION	Sign/Print Names	Relinquished By	Date/Time	Received By	Date/Time
		Brent Porter	8/19/99 1500	Refer 1A	8/19/99 1600
		REF 1A	82399 1100	[signature]	82399 1100
		[signature]	82399 1100	FED EX	
		Jeelee		Johnson	8/24/99 0930

SPECIAL INSTRUCTIONS

See Chain of Custody comments on SAF for special instructions.

(1) NO2/NO3 - 353.1; IC Anions - 300.0 {Chloride, Fluoride, Nitrate, Nitrite, Phosphate, Sulfate}; Ammonia - 350.3; Sulfides - 9030; pH (Water) - 9040
(2) ICP Metals - 6010A (Supertrace) {Arsenic, Barium, Cadmium, Chromium, Copper, Lead, Nickel, Selenium, Silver, Vanadium, Zinc}

COLLECTOR UNAVAILABLE TO SIGN COC

From non red area

Matrix *
Soil
Water
Vapor
Other Solid
Other Liquid

LABORATORY SECTION	Received By	Title	Date/Time
FINAL SAMPLE DISPOSITION	Disposal Method	Disposed By	Date/Time

Originator Initials

SDR # B99-048
Revision #: 0
Date Initiated: 08/25/99

SAMPLE DISPOSITION RECORD

SAF: B99-085
OU: 200-CW-1
Project ID: 200-CW-1
Task ID: 1
Sampling Event: 200 Area Source Characterization 200-CW-1 OU – QC Sampling

Laboratory: TMA/RECRA

Task Manager: M.E. Todd

Sampling Information:
Number of Samples: 1
ID Numbers: B0W651
Matrix: Water
Collection Date: 08/19/99

Issue Background:

Class: ☒ Project Data Use ☐ General Laboratory Direction ☐ Validation Direction ☐ Sample Management Direction

Type: Incorrect Sample Preservation
Description: H2S04 preservative added to bottle containing sample material for pH, Anions, and Sulfides analyses

Disposition:

Description: During preparation of the SAF/FSR, ERC Sample Management combined analytes in order to reduce the total number of bottles required per sample. One combined analyte set included N02/N03, Anions, Ammonia, pH, and Sulfides. H2S04 was added as a preservative to the bottle containing these analytes. This preservative was appropriate only for N02/N03, Ammonia, and Anions (excluding sulfate) analytes. The laboratory was instructed to cancel analyses for Sulfides and pH. In addition, the laboratory was requested not to report the sulfate concentration determined from the Anions analysis. The SAF/FSR has been revised to eliminate the preservative problem.

Justification: Only the listed analytes will be impacted by the H2S04 preservative; analysis of those analytes impacted by the preservative would produce non-representative data. Revision of the SAF/FSR is necessary to eliminate the preservative issue on samples collected under this SAF/FSR in the future.

Approval Signatures:

S. J. Trent 8/27/99
Project Coordinator (Print/Sign Name) Date

M. E. Todd 8/30/99
Task Manager (Print/Sign Name) Date

RECRA
ENVIRONMENTAL
INC.

Chemical and Environmental Measurement Information

Recra LabNet Philadelphia
Analytical Report

Client : TNU-HANFORD B99-085
RFW# : 9908L851
SDG/SAF #: H0500/ B99-085

W.O. #: 10985-001-001-9999-00
Date Received: 08-24-99

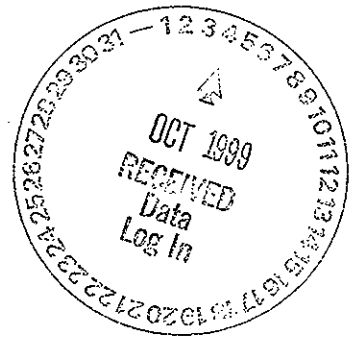
GC/MS VOLATILE

Two (2) water samples were collected on 08-19-99.

The samples and their associated QC samples were analyzed according to criteria set forth in Recra OPs based on SW 846 Method 8260A for TCL Volatile target compounds on 09-02-99.

The following is a summary of the QC results accompanying these sample results and a description of any problems encountered during their analyses:

1. The cooler temperature upon receipt has been recorded on the chain-of-custody.
2. The required holding time for analysis was met.
3. Non-target compounds were not detected in the samples.
4. All surrogate recoveries were within EPA QC limits.
5. All matrix spike recoveries were within EPA QC limits.
6. The method blank contained the common laboratory contaminant Methylene Chloride at a level less than 4x the CRQL.
7. The analyses were performed with the method enhancement of a 40°C heated purge to standardize the purge temperature and improve overall purging efficiency.



J. Michael Taylor
Vice President
Philadelphia Analytical Laboratory

09-30-99
Date

som\group\data\ voa\tnu08851.doc

208 Welsh Pool Road • Lionville, PA 19341-1333 • (610) 280-3000 • Fax (610) 280-3041

GLOSSARY OF VOA DATA

DATA QUALIFIERS

U = Compound was analyzed for but not detected. The associated numerical value is the estimated sample quantitation limit which is included and corrected for dilution and percent moisture.

J = Indicates an estimated value. This flag is used under the following circumstances: 1) when estimating a concentration for tentatively identified compounds (TICs) where a 1:1 response is assumed; or 2) when the mass spectral data indicate the presence of a compound that meets the identification criteria but the result is less than the specified detection limit but greater than zero. For example, if the limit of detection is 10 ug/L and a concentration of 3 ug/L is calculated, it is reported as 3J.

B = This flag is used when the analyte is found in the associated blank as well as in the sample. It indicates possible/probable blank contamination. This flag is also used for a TIC as well as for a positively identified TCL compound.

E = Indicates that the compound was detected beyond the calibration range and was subsequently analyzed at a dilution.

D = Identifies all compounds identified in an analysis at a secondary dilution factor.

I = Interference.

NQ = Result qualitatively confirmed but not able to quantify.

N = Indicates presumptive evidence of a compound. This flag is only used for tentatively identified compounds (TICs), where the identification is based on a mass spectral library search. It is applied to all TIC results. For generic characterization of a TIC, such as chlorinated hydrocarbon, the N code is not used.

X = This flag is used for a TIC compound which is quantified relative to a response factor generated from a daily calibration standard (rather than quantified relative to the closest internal standard).

Y = Additional qualifiers used as required are explained in the case narrative.

GLOSSARY OF VOA DATA

ABBREVIATIONS

BS = Indicates blank spike in which reagent grade water is spiked with the CLP matrix spike solutions and carried through all the steps in the method. Spike recoveries are reported.

BSD = Indicates blank spike duplicate.

MS = Indicates matrix spike.

MSD = Indicates matrix spike duplicate.

DL = Suffix added to sample number to indicate that results are from a diluted analysis.

NA = Not Applicable.

DF = Dilution Factor.

NR = Not Required.

SP, Z = Indicates Spiked Compound.

Recra LabNet - Lionville Laboratory

Volatiles by GC/MS, HSL List

Report Date: 09/24/99 06:12

RFW Batch Number: **9908L851** Client: **TNU-HANFORD B99-085** Work Order: 10985001001 Page: 1a

	Cust ID:	B0W679	B0W680	B0W680	B0W680	VBLKPK
Sample Information	RFW#:	001	002	002 MS	002 MSD	99LVH334-MB1
	Matrix:	WATER	WATER	WATER	WATER	WATER
	D.F.:	1.00	1.00	1.00	1.00	1.00
	Units:	UG/L	UG/L	UG/L	UG/L	UG/L
Surrogate Recovery	Toluene-d8	94 %	99 %	89 %	96 %	96 %
	Bromofluorobenzene	93 %	99 %	90 %	100 %	94 %
	1,2-Dichloroethane-d4	97 %	103 %	100 %	103 %	99 %
Chloromethane		10 U	10 U	10 U	10 U	10 U
Bromomethane		10 U	10 U	10 U	10 U	10 U
Vinyl Chloride		10 U	10 U	10 U	10 U	10 U
Chloroethane		10 U	10 U	10 U	10 U	10 U
Methylene Chloride		8 B	9 B	8 B	9 B	16
Acetone		10 U	10 U	10 U	10 U	10 U
Carbon Disulfide		5 U	5 U	5 U	5 U	5 U
1,1-Dichloroethene		5 U	5 U	88 %	89 %	5 U
1,1-Dichloroethane		5 U	5 U	5 U	5 U	5 U
1,2-Dichloroethene (total)		5 U	5 U	5 U	5 U	5 U
Chloroform		5 U	5 U	5 U	5 U	5 U
1,2-Dichloroethane		5 U	5 U	5 U	5 U	5 U
2-Butanone		10 U	10 U	10 U	10 U	10 U
1,1,1-Trichloroethane		5 U	5 U	5 U	5 U	5 U
Carbon Tetrachloride		5 U	5 U	5 U	5 U	5 U
Bromodichloromethane		5 U	5 U	5 U	5 U	5 U
1,2-Dichloropropane		5 U	5 U	5 U	5 U	5 U
cis-1,3-Dichloropropene		5 U	5 U	5 U	5 U	5 U
Trichloroethene		5 U	5 U	93 %	94 %	5 U
Dibromochloromethane		5 U	5 U	5 U	5 U	5 U
1,1,2-Trichloroethane		5 U	5 U	5 U	5 U	5 U
Benzene		5 U	5 U	100 %	100 %	5 U
Trans-1,3-Dichloropropene		5 U	5 U	5 U	5 U	5 U
Bromoform		5 U	5 U	5 U	5 U	5 U
4-Methyl-2-pentanone		10 U	10 U	10 U	10 U	10 U
2-Hexanone		10 U	10 U	10 U	10 U	10 U
Tetrachloroethene		5 U	5 U	5 U	5 U	5 U
1,1,2,2-Tetrachloroethane		5 U	5 U	5 U	5 U	5 U
Toluene		5 U	5 U	96 %	98 %	5 U

*= Outside of EPA CLP QC limits.

9/28/99

	Cust ID:	B0W679	B0W680	B0W680	B0W680	VBLKPK
	RFW#:	001	002	002 MS	002 MSD	99LVH334-MB1
Chlorobenzene		5 U	5 U	97 %	99 %	5 U
Ethylbenzene		5 U	5 U	5 U	5 U	5 U
Styrene		5 U	5 U	5 U	5 U	5 U
Xylene (total)		5 U	5 U	5 U	5 U	5 U

*= Outside of EPA CLP QC limits.

9/29-28-99

Recra LabNet - Lionville Laboratory
VOA ANALYTICAL DATA PACKAGE FOR
TNU-HANFORD B99-085

DATE RECEIVED: 08/24/99 RFW LOT # :9908L851

CLIENT ID	RFW #	MTX	PREP #	COLLECTION	EXTR/PREP	ANALYSIS
B0W679	001	W	99LVH334	08/19/99	N/A	09/02/99
B0W680	002	W	99LVH334	08/19/99	N/A	09/02/99
B0W680	002 MS	W	99LVH334	08/19/99	N/A	09/02/99
B0W680	002 MSD	W	99LVH334	08/19/99	N/A	09/02/99
LAB QC:						
VBLKPK	MB1	W	99LVH334	N/A	N/A	09/02/99

09-28-99

RECRA LabNet Use Only
9908L851

Custody Transfer Record/Lab Work Request

Page 1 of 1

ALL FIELD PERSONNEL: COMPLETE ONLY SHADED AREAS

(8) ~~perrone~~ ~~wet lab~~ metals dig.

RECRA LabNet

Client: TNU-Hanford B99-085
Est. Final Proj. Sampling Date:
Project #: 10985-001-001-9999-00
Project Contact/Phone #:
RECRA Project Manager: OJ
QC: spec Del: std TAT: 30 day
Date Rec'd: 8/24/99 Date Due: 9/23/99
Account #:

	VOA	BNA	Pest/PCB	Herb				Metal	CN						
Refrigerator #	1	6									6				
#/Type Container Liquid	3g	2g			W/VOA						2p				
#/Type Container Solid															
Volume Liquid	40	ltr									ltr				
Volume Solid															
Preservatives	HCl	-									HNO3				
RECRA LabNet Use Only	0224H	0225H			05CSC			Met①		Anq①	1N3NA 1NH3N				

ORGANIC: VOA, BNA, Pest/PCB, Herb. INORG: Metal, CN.

MATRIX CODES:
S - Soil
SE - Sediment
SO - Solid
SL - Sludge
W - Water
O - Oil
A - Air
DS - Drum Solids
DL - Drum Liquids
L - EP/TCLP Leachate
WI - Wipe
X - Other
F - Fish

Lab ID	Client ID/Description	MS	MSD	Matrix	Date Collected	Time Collected	0224H	0225H			05CSC			Met①		Anq①	1N3NA 1NH3N
001	BØW679			W	8/19/99	0715	✓	✓			✓			✓		⊗	✓
002	BØW680			W	↓	0510	✓										

Run Matrix QC

Special Instructions:
saf # B99-085
8/27/99 added Be to metals per client
COMPOSITE WASTE

DATE/REVISIONS: Logged 8/26/99 - run from pres. bottle
Anq ① = (ICCL, ICFL, ICNO2, ICNO3, ICPO4)
→ 2. ICSO4, ISFD, IPH - not logged
3. improperly upreserved bottle.
met① = As, Ba, Cd, Cr, Cu, Pb, Ni, Se,
5. Ag, U, Zn, Be
* 6. 4935795286602

RECRA LabNet Use Only
Samples were: 1) Shipped ✓ or Hand Delivered
Airbill # *
2) Ambient or (Chilled)
3) Received in Good Condition (Y) or N
4) Labels Indicate Properly Preserved Y or (N)
5) Received Within Holding Times Y or (N)

COC Tape was:
1) Present on Outer Package (Y) or N
2) Unbroken on Outer Package (Y) or N
3) Present on Sample (Y) or N
4) Unbroken on Sample (Y) or N
COC Record Present Upon Sample Rec't (Y) or N
Cooler Temp. 3.7 C

Relinquished by	Received by	Date	Time
FedEx	Janson	8/24/99	0930

Relinquished by	Received by	Date	Time
	REWRITTEN ORIGINAL		

Discrepancies Between Samples Labels and COC Record? Y or (N)
NOTES:

ICNO2, ICNO3, ICPO4, IPH out

RECRA
ENVIRONMENTAL
INC.

Chemical and Environmental Measurement Information

Recra LabNet Philadelphia
Analytical Report

Client : TNU-HANFORD B99-085
RFW# : 9908L851
SDG/SAF #: H0500/B99-085

W.O. #: 10985-001-001-9999-00
Date Received: 08-24-99

SEMIVOLATILE

One (1) water sample was collected on 08-19-99.

The sample and its associated QC samples were extracted on 08-26-99 and analyzed according to criteria set forth in Recra OPs based on SW 846 Method 8270B for TCL Semivolatile target compounds on 09-13-99.

The following is a summary of the QC results accompanying the sample results and a description of any problems encountered during their analyses:

1. The cooler temperature upon receipt has been recorded on the chain-of-custody.

2. The required holding times for extraction and analysis were met.

3. Non-target compounds were detected in the sample.

4. All surrogate recoveries were within EPA QC limits.

5. One (1) of twenty-two (22) matrix spike recoveries was outside EPA QC limits.

6. All blank spike recoveries were within EPA QC limits.

7. The method blank contained the common laboratory contaminant Bis(2-Ethylhexyl)phthalate at a level greater than 5x the CRQL; however, no other compounds were detected in the samples. Re-extraction was not required. A copy of the Sample Discrepancy Report (SDR) has been enclosed.

8. A spectral search was conducted for the compound Butylated Hydroxytoluene; this compound was not identified in the samples.

H. S. Welsh

09-30-99

J. Michael Taylor
Vice President
Philadelphia Analytical Laboratory

Date

som\gorup\data\bna\tnu08851.doc

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GLOSSARY OF BNA DATA

DATA QUALIFIERS

U = Compound was analyzed for but not detected. The associated numerical value is the estimated sample quantitation limit which is included and corrected for dilution and percent moisture.

J = Indicates an estimated value. This flag is used under the following circumstances: 1) when estimating a concentration for tentatively identified compounds (TICs) where a 1:1 response is assumed; or 2) when the mass spectral data indicate the presence of a compound that meets the identification criteria but the result is less than the specified detection limit but greater than zero. For example, if the limit of detection is 10 ug/L and a concentration of 3 ug/L is calculated, it is reported as 3J.

B = This flag is used when the analyte is found in the associated blank as well as in the sample. It indicates possible/probable blank contamination. This flag is also used for a TIC as well as for a positively identified TCL compound.

E = Indicates that the compound was detected beyond the calibration range and was subsequently analyzed at a dilution.

D = Identifies all compounds identified in an analysis at a secondary dilution factor.

I = Interference.

NQ = Result qualitatively confirmed but not able to quantify.

A = Indicates that a TIC is a suspected aldol-condensation product.

N = Indicates presumptive evidence of a compound. This flag is only used for tentatively identified compounds (TICs), where the identification is based on a mass spectral library search. It is applied to all TIC results. For generic characterization of a TIC, such as chlorinated hydrocarbon, the N code is not used.

X = This flag is used for a TIC compound which is quantified relative to a response factor generated from a daily calibration standard (rather than quantified relative to the closest internal standard).

Y = Additional qualifiers used as required are explained in the case narrative.

GLOSSARY OF BNA DATA

ABBREVIATIONS

BS = Indicates blank spike in which reagent grade water is spiked with the CLP matrix spike solutions and carried through all the steps in the method. Spike recoveries are reported.

BSD = Indicates blank spike duplicate.

MS = Indicates matrix spike.

MSD = Indicates matrix spike duplicate.

DL = Suffix added to sample number to indicate that results are from a diluted analysis.

NA = Not Applicable.

DF = Dilution Factor.

NR = Not Required.

SP, Z = Indicates Spiked Compound.

Recra LabNet Philadelphia Sample Discrepancy Report (SDR)

SDR #: 99MS011

Initiator: C Taylor
Date: 9/28/99
Client: INU-Hanford
B99085

RFW Batch: 9908L851
Samples: all
Method: SW846/MCAWW/CLP/

Parameter: BNA
Matrix: water/cont.
Prep Batch: 99LE1035-MB1

1. Reason for SDR

a. COC Discrepancy __ Tech Profile Error __ Client Request __ Sampler Error on C-O-C __ Transcription Error __ Wrong Test Code __ Other _____

b. General Discrepancy

__ Missing Sample/Extract __ Container Broken __ Wrong Sample Pulled __ Label ID's Illegible
__ Hold Time Exceeded __ Insufficient Sample __ Preservation Wrong __ Received Past Hold
__ Improper Bottle Type __ Not Amenable to Analysis

Note: Verified by [Log-In] or [Prep Group] (circle)...signature/date: _____

c. QC Problem (Include all relevant specific results; attach data if necessary)

Blank contained 75xCRQL of bis(2 Ethyl Hexyl) phthalate (65 µg/L)

2. Known or Probable Causes(s)

lab contamination.

3. Discussion and Proposed Action Other Description:

__ Re-log
__ Entire Batch
__ Following Samples: _____
__ Re-leach
__ Re-extract
__ Re-digest
__ Revise EDD
__ Change Test Code to _____
__ Place On/Take Off Hold (circle)

Sample & QC ~~were~~ contained no targets except phthalate. Amounts detected were 10-59 µg/L
report & narrate

4. Project Manager Instructions...signature/date: 9/28/99

__ Concur with Proposed Action
__ Disagree with Proposed Action; See Instruction
__ Include in Case Narrative
__ Client Contacted:
Date/Person _____
__ Add
__ Cancel

5. Final Action...signature/date: CT 9/28/99 Other Explanation:

__ Verified re-[log][leach][extract][digest][analysis] (circle)
X Included in Case Narrative
__ Hard Copy COC Revised
__ Electronic COC Revised
__ EDD Corrections Completed

When Final Action has been recorded, forward original to QA Specialist for distribution and filing.

Route	Distribution of Completed SDR	Route	Distribution of Completed SDR
__	X Initiator	__	__ Metals: Doughty
__	X Lab Manager: M. Taylor	__	__ Inorganic: Perrone
__	X Project Mgr: Stone/Carey/Schrenkel/Johnson	__	__ GC/LC: Schnell
__	X Section Mgr: Wesson/Daniels	__	__ MS: LeMin/Taylor
__	X QA (file): Racioppi	__	__ Log-in: Toder
__	__ Data Management: Feldman	__	__ Admin: Soos
__	__ Sample Prep: Schnell/Doughty/Kauffman	__	__ Other: _____

3A

Recra LabNet - Lionville Laboratory
Semivolatiles by GC/MS, HSL List
Report Date: 09/28/99 16:12

RFW Batch Number: **9908L851** Client: **TNU-HANFORD B99-085** Work Order: 10985001001 Page: 1a

	Cust ID:	B0W679	B0W679	B0W679	SBLKBT	SBLKBT BS
Sample Information	RFW#:	001	001 MS	001 MSD	99LE1035-MB1	99LE1035-MB1
	Matrix:	WATER	WATER	WATER	WATER	WATER
	D.F.:	1.00	1.00	1.00	1.00	1.00
	Units:	UG/L	UG/L	UG/L	UG/L	UG/L
Surrogate Recovery	Nitrobenzene-d5	78 %	79 %	81 %	82 %	65 %
	2-Fluorobiphenyl	72 %	80 %	73 %	72 %	55 %
	Terphenyl-d14	97 %	96 %	87 %	95 %	78 %
	Phenol-d5	59 %	59 %	50 %	55 %	50 %
	2-Fluorophenol	50 %	52 %	52 %	51 %	46 %
	2,4,6-Tribromophenol	69 %	74 %	77 %	69 %	58 %
		fl	fl	fl	fl	fl fl
Phenol		12 U	63 %	55 %	10 U	49 %
bis(2-Chloroethyl)ether		12 U	24 U	24 U	10 U	10 U
2-Chlorophenol		12 U	71 %	64 %	10 U	51 %
1,3-Dichlorobenzene		12 U	24 U	24 U	10 U	10 U
1,4-Dichlorobenzene		12 U	74 %	69 %	10 U	59 %
1,2-Dichlorobenzene		12 U	24 U	24 U	10 U	10 U
2-Methylphenol		12 U	24 U	24 U	10 U	10 U
2,2'-oxybis(1-Chloropropane)		12 U	24 U	24 U	10 U	10 U
4-Methylphenol		12 U	24 U	24 U	10 U	10 U
N-Nitroso-di-n-propylamine		12 U	81 %	98 %	10 U	81 %
Hexachloroethane		12 U	24 U	24 U	10 U	10 U
Nitrobenzene		12 U	24 U	24 U	10 U	10 U
Isophorone		12 U	24 U	24 U	10 U	10 U
2-Nitrophenol		12 U	24 U	24 U	10 U	10 U
2,4-Dimethylphenol		12 U	24 U	24 U	10 U	10 U
bis(2-Chloroethoxy)methane		12 U	24 U	24 U	10 U	10 U
2,4-Dichlorophenol		12 U	24 U	24 U	10 U	10 U
1,2,4-Trichlorobenzene		12 U	70 %	64 %	10 U	61 %
Naphthalene		12 U	24 U	24 U	10 U	10 U
4-Chloroaniline		12 U	24 U	24 U	10 U	10 U
Hexachlorobutadiene		12 U	24 U	24 U	10 U	10 U
4-Chloro-3-methylphenol		12 U	60 %	60 %	10 U	54 %
2-Methylnaphthalene		12 U	24 U	24 U	10 U	10 U
Hexachlorocyclopentadiene		12 U	24 U	24 U	10 U	10 U
2,4,6-Trichlorophenol		12 U	24 U	24 U	10 U	10 U
2,4,5-Trichlorophenol		30 U	60 U	60 U	25 U	25 U

*= Outside of EPA CLP QC limits.

	Cust ID:	B0W679	B0W679	B0W679	SBLKBT	SBLKBT BS
	RFW#:	001	001 MS	001 MSD	99LE1035-MB1	99LE1035-MB1
2-Chloronaphthalene		12 U	24 U	24 U	10 U	10 U
2-Nitroaniline		30 U	60 U	60 U	25 U	25 U
Dimethylphthalate		12 U	24 U	24 U	10 U	10 U
Acenaphthylene		12 U	24 U	24 U	10 U	10 U
2,6-Dinitrotoluene		12 U	24 U	24 U	10 U	10 U
3-Nitroaniline		30 U	60 U	60 U	25 U	25 U
Acenaphthene		12 U	92 %	86 %	10 U	72 %
2,4-Dinitrophenol		30 U	60 U	60 U	25 U	25 U
4-Nitrophenol		30 U	59 %	72 %	25 U	53 %
Dibenzofuran		12 U	24 U	24 U	10 U	10 U
2,4-Dinitrotoluene		12 U	94 %	100 * %	10 U	78 %
Diethylphthalate		12 U	2 J	24 U	10 U	10 U
4-Chlorophenyl-phenylether		12 U	24 U	24 U	10 U	10 U
Fluorene		12 U	24 U	24 U	10 U	10 U
4-Nitroaniline		30 U	60 U	60 U	25 U	25 U
4,6-Dinitro-2-methylphenol		30 U	60 U	60 U	25 U	25 U
N-Nitrosodiphenylamine (1)		12 U	24 U	24 U	10 U	10 U
4-Bromophenyl-phenylether		12 U	24 U	24 U	10 U	10 U
Hexachlorobenzene		12 U	24 U	24 U	10 U	10 U
Pentachlorophenol		30 U	74 %	82 %	25 U	62 %
Phenanthrene		12 U	24 U	24 U	10 U	10 U
Anthracene		12 U	24 U	24 U	10 U	10 U
Carbazole		12 U	24 U	24 U	10 U	10 U
Di-n-butylphthalate		12 U	24 U	24 U	10 U	10 U
Fluoranthene		12 U	24 U	24 U	10 U	10 U
Pyrene		12 U	86 %	77 %	10 U	74 %
Butylbenzylphthalate		12 U	24 U	24 U	10 U	10 U
3,3'-Dichlorobenzidine		12 U	24 U	24 U	10 U	10 U
Benzo(a)anthracene		12 U	24 U	24 U	10 U	10 U
Chrysene		12 U	24 U	24 U	10 U	10 U
bis(2-Ethylhexyl)phthalate		51 B	59 B	10 JB	65	24 B
Di-n-octyl phthalate		12 U	24 U	24 U	10 U	10 U
Benzo(b)fluoranthene		12 U	24 U	24 U	10 U	10 U
Benzo(k)fluoranthene		12 U	24 U	24 U	10 U	10 U
Benzo(a)pyrene		12 U	24 U	24 U	10 U	10 U
Indeno(1,2,3-cd)pyrene		12 U	24 U	24 U	10 U	10 U
Dibenz(a,h)anthracene		12 U	24 U	24 U	10 U	10 U
Benzo(g,h,i)perylene		12 U	24 U	24 U	10 U	10 U

(1) - Cannot be separated from Diphenylamine. *= Outside of EPA CLP QC limits.

05

1F

CLIENT SAMPLE NO.

SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET
TENTATIVELY IDENTIFIED COMPOUNDS

B0W679

Lab Name: Recra.LabNet Work Order: 10985001001

Client: TNU-HANFORD B99-085

Matrix: (soil/water) WATER Lab Sample ID: 9908L851-001

Sample wt/vol: 820 (g/mL) ML Lab File ID: A091312

Level: (low/med) LOW Date Received: 08/24/99

% Moisture: _____ decanted: (Y/N)__ Date Extracted: 08/26/99

Concentrated Extract Volume: 1000(uL) Date Analyzed: 09/13/99

Injection Volume: 2.0(uL) Dilution Factor: 1.00

GPC Cleanup: (Y/N) N pH: 7.0

Number TICs found: 6 CONCENTRATION UNITS: (ug/L or ug/Kg) UG/L

	CAS NUMBER	COMPOUND NAME	RT	EST. CONC.	Q
1.		UNKNOWN	7.16	2	J
2.		UNKNOWN	7.96	2	J
3.		UNKNOWN	8.23	4	J
4.		UNKNOWN	8.49	4	J
5.		UNKNOWN	8.59	5	J
6.		UNKNOWN	23.72	5	J

1F

SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET
TENTATIVELY IDENTIFIED COMPOUNDS

CLIENT SAMPLE NO.

SBLKBT

Lab Name: Recra.LabNet Work Order: 10985001001

Client: TNU-HANFORD B99-085

Matrix: (soil/water) WATER Lab Sample ID: 99LE1035-MB1

Sample wt/vol: 1000 (g/mL) ML Lab File ID: A091307

Level: (low/med) LOW Date Received: 08/26/99

% Moisture: _____ decanted: (Y/N)__ Date Extracted: 08/26/99

Concentrated Extract Volume: 1000(uL) Date Analyzed: 09/13/99

Injection Volume: 2.0(uL) Dilution Factor: 1.00

GPC Cleanup: (Y/N) N pH: 7.0

Number TICs found: 8 CONCENTRATION UNITS: (ug/L or ug/Kg) UG/L

	CAS NUMBER	COMPOUND NAME	RT	EST. CONC.	Q
1.		UNKNOWN	7.27	5	J
2.		UNKNOWN	7.96	10	J
3.		UNKNOWN	8.02	4	J
4.		UNKNOWN	8.23	6	J
5.		UNKNOWN	8.26	3	J
6.		UNKNOWN	8.50	6	J
7.		UNKNOWN	8.58	10	J
8.		UNKNOWN	8.66	2	J

Recra LabNet - Lionville Laboratory
BNA ANALYTICAL DATA PACKAGE FOR
TNU-HANFORD B99-085

DATE RECEIVED: 08/24/99 RFW LOT # :9908L851

CLIENT ID	RFW #	MTX	PREP #	COLLECTION	EXTR/PREP	ANALYSIS
B0W679	001	W	99LE1035	08/19/99	08/26/99	09/13/99
B0W679	001 MS	W	99LE1035	08/19/99	08/26/99	09/13/99
B0W679	001 MSD	W	99LE1035	08/19/99	08/26/99	09/13/99
LAB QC:						
SBLKBT	MB1	W	99LE1035	N/A	08/26/99	09/13/99
SBLKBT	MB1 BS	W	99LE1035	N/A	08/26/99	09/13/99

RECRA LabNet Use Only
9908L851

Custody Transfer Record/Lab Work Request

Page 1 of 1

RECRA LabNet

ALL FIELD PERSONNEL: COMPLETE ONLY SHADED AREAS

(8) ~~perrone~~ ~~wet lab~~ metals dig.

Client: TNU-Hanford B99-085
Est. Final Proj. Sampling Date:
Project #: 10985-001-001-9999-00
Project Contact/Phone #:
RECRA Project Manager: OJ
QC: spec Del: std TAT: 30 day
Date Rec'd: 8/24/99 Date Due: 9/23/99
Account #:

Refrigerator #		1	6								6		
#/Type Container	Liquid	3g	2g								2p		
	Solid												
Volume	Liquid	40	Ltr		W/VOA						Ltr		
	Solid												
Preservatives		HCl	-								HNO3		
ANALYSES REQUESTED		ORGANIC: VOA	BNA	Pest/PCB	Herb			INORG: Metal	CN				
RECRA LabNet Use Only		0224H	0225H			05C5C		Met(1)		Anz(1)	1N3N9 / 1NH3N		

MATRIX CODES:
S - Soil
SE - Sediment
SO - Solid
SL - Sludge
W - Water
O - Oil
A - Air
DS - Drum Solids
DL - Drum Liquids
L - EP/TCLP Leachate
WI - Wipe
X - Other
F - Fish

Lab ID	Client ID/Description	MS	MSD	Matrix	Date Collected	Time Collected	VOA	BNA	Pest/PCB	Herb	05C5C		Metal	CN	Anz(1)	1N3N9 / 1NH3N
001	BØW679			W	8/19/99	0715	✓	✓			✓		✓		⊗	✓
002	BØW680			W	⊥	0510	✓									

Run Matrix QC

Special Instructions:
saf # B99-085
8/27/99 added Be to metals per client

COMPOSITE WASTE

DATE/REVISIONS:
Logged 8/26/99 - run from pres. bottle
1. ~~Anz~~ (1) = (ICCL, ICFL, ICNO2, ICNO3, ICPO4)
2. → ICSO4, ISFD, IPH - not logged
3. improperly preserved bottle
4. Met(1) = As, Ba, Cd, Cr, Cu, Pb, Ni, Se,
5. Ag, U, Zn, Be
6. * 4935795286602

RECRA LabNet Use Only
Samples were:
1) Shipped ✓ or Hand Delivered ___
Airbill # *
2) Ambient or (Chilled)
3) Received in Good Condition (Y) or N
4) Labels Indicate Properly Preserved Y or (N)
5) Received Within Holding Times Y or (N)

COC Tape was:
1) Present on Outer Package (Y) or N
2) Unbroken on Outer Package (Y) or N
3) Present on Sample (Y) or N
4) Unbroken on Sample (Y) or N
COC Record Present Upon Sample Rec't (Y) or N
Cooler Temp. 3.7 °C

Relinquished by	Received by	Date	Time
FedEx	Janson	8/24/99	0930

Relinquished by	Received by	Date	Time
	REWRITTEN		
	ORIGINAL		

Discrepancies Between Samples Labels and COC Record? Y or (N)
NOTES:
ICNO2, ICNO3, ICPO4, IPH out

RECRA LabNet
a division of Recra Environmental, Inc.
Virtual Laboratories Everywhere

Recra LabNet Philadelphia
Analytical Report

Client : TNU-HANFORD B99-085
RFW# : 9908L851
SDG/SAF# : B99-085/H0500

W.O.# : 10985-001-001-9999-00
Date Received: 08-24-99

METALS CASE NARRATIVE

1. This narrative covers the analyses of 1 water sample.

2. The sample was prepared and analyzed in accordance with methods checked on the attached glossary.

3. All analyses were performed within the required holding times.

4. The cooler temperature has been recorded on the Chain of Custody.

5. All Initial and Continuing Calibration Verifications (ICV/CCVs) were within the 90-110% control limits (80-120% for Mercury).

6. All Initial and Continuing Calibration Blanks (ICB/CCBs) were within control limits (less than the PQL).

7. All preparation/method blanks (MB) were within method criteria {less than the Practical Quantitation Limit (3X the IDL) or samples greater than 20X MB value}. Refer to the Inorganics Method Blank Data Summary.

8. All ICP Interference Check Standards were within control limits.

9. All laboratory control samples (LCS) were within the laboratory control limits. Refer to the Inorganics Laboratory Control Standards Report.

10. All matrix spike (MS) recoveries were within the 75-125% control limits. Refer to the Inorganics Accuracy Report.

11. The duplicate analyses for 4 analytes were outside the 20% Relative Percent Difference (RPD) control limits. Refer to the Inorganics Precision Report.

208 Welsh Pool Road • Lionville, PA 19341-1333 • (610) 280-3000 • Fax (610) 280-3041

12. For the purposes of this report, the data has been reported to the Instrument Detection Limit (IDL). Values between the IDL and the Practical Quantitation Limit (PQL) are acquired in a region of less-certain quantification.

for Maureen L. Doughty

J. Michael Taylor
Vice President
Philadelphia Analytical Laboratory

9/22/99
Date

mld/m08-851

METALS METHOD GLOSSARY

The following methods are used as reference for the digestion and analysis of samples contained within this Recra Lot#: 9908L851

Leaching Procedure: __1310 __1311 __1312 __Other:_____

CLP Metals __ Digestion and __ Analysis Methods: __ILM03.0 __ILM04.0

Metals Digestion Methods: ✓3005A __3010A __3015 __3020A __3050A __3051 __200.7 __SS17
__Other: _____

Metals Analysis Methods

	SW846	EPA	STD MTD	EPA OSWR	USATHAMA
Aluminum	__6010B	__200.7			__99
Antimony	__6010B __7041 [5]	__200.7 __204.2			__99
Arsenic	✓6010B __7060A [5]	__200.7 __206.2	__3113B		__99
Barium	✓6010B	__200.7			__99
Beryllium	✓6010B	__200.7			__99
Bismuth	__6010B [1]	__200.7 [1]		__1620	__99
Boron	__6010B	__200.7			__99
Cadmium	✓6010B __7131A [5]	__200.7 __213.2			__99
Calcium	__6010B	__200.7			__99
Chromium	✓6010B __7191 [5]	__200.7 __218.2			__SS17
Cobalt	__6010B	__200.7			__99
Copper	✓6010B __7211 [5]	__200.7 __220.2			__99
Iron	__6010B	__200.7			__99
Lead	✓6010B __7421 [5]	__200.7 __239.2	__3113B		__99
Lithium	__6010B __7430 [4]	__200.7		__1620	__99
Magnesium	__6010B	__200.7			__99
Manganese	__6010B	__200.7			__99
Mercury	__7470A [3] __7471A [3]	__245.1 [2] __245.5 [2]			__99
Molybdenum	__6010B	__200.7			__99
Nickel	✓6010B	__200.7			__99
Potassium	__6010B __7610 [4]	__200.7 __258.1 [4]			__99
Rare Earths	__6010B [1]	__200.7 [1]		__1620	__99
Selenium	✓6010B __7740 [5]	__200.7 __270.2	__3113B		__99
Silicon	__6010B [1]	__200.7		__1620	__99
Silica	__6010B	__200.7		__1620	__99
Silver	✓6010B __7761 [5]	__200.7 __272.2			__99
Sodium	__6010B __7770 [4]	__200.7 __273.1 [4]			__99
Strontium	__6010B	__200.7			__99
Thallium	__6010B __7841 [5]	__200.7 __279.2 __200.9			__99
Tin	__6010B	__200.7			__99
Titanium	__6010B	__200.7			__99
Uranium	__6010B [1]	__200.7 [1]		__1620	__99
Vanadium	✓6010B	__200.7			__99
Zinc	✓6010B	__200.7			__99
Zirconium	__6010B [1]	__200.7 [1]		__1620	__99

Other:_____ **Method:**_____

METHOD REFERENCES AND DATA QUALIFIERS

DATA QUALIFIERS

U = Indicates that the parameter was not detected at or above the reported limit. The associated numerical value is the sample detection limit.

* = Indicates that the original sample result is greater than 4x the spike amount added.

ABBREVIATIONS

MB = Method or Preparation Blank.
MS = Matrix Spike.
MSD = Matrix Spike Duplicate.
REP = Sample Replicate
LCS = Laboratory Control Sample.
NC = Not calculated.

ANALYTICAL METAL METHODS

1. Not included in the method element list.

2. Modified Hg: Hg1 and Hg2 require less total volume of digestate due to the autosampler analysis. Sample volumes and reagents for mercury determinations in water and soil have been proportionately scaled down to adapt to this semi-automated technique. The sample volume used for water analysis is 33 mL. For soils, 0.1 grams of sample is taken to a final volume of 50 mL (including all reagents).

3. Modified Hg: Hg1 and Hg2 require less total volume of digestate due to the autosampler analysis. Sample volumes and reagents for mercury determinations in water and soil have been proportionately scaled down to adapt to this semi-automated technique. The sample volume used for water analysis is 33 mL. For soils, three 0.1 gram of sample is taken to a final volume of 50 mL (including all reagents).

4. Flame AA.

5. Graphite Furnace AA.

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INORGANICS DATA SUMMARY REPORT 09/22/99

CLIENT: TNU-HANFORD B99-085 RECRA LOT #: 9908L851

WORK ORDER: 10985-001-001-9999-00

SAMPLE	SITE ID	ANALYTE	RESULT	UNITS	REPORTING LIMIT	DILUTION FACTOR
-001	B0W679	Silver, Total	1.5	UG/L	1.0	1.0
		Arsenic, Total	4.2	UG/L	3.3	1.0
		Barium, Total	0.70	UG/L	0.30	1.0
		Beryllium, Total	0.10 u	UG/L	0.10	1.0
		Cadmium, Total	0.30 u	UG/L	0.30	1.0
		Chromium, Total	0.80 u	UG/L	0.80	1.0
		Copper, Total	1.2 u	UG/L	1.2	1.0
		Nickel, Total	1.3	UG/L	1.2	1.0
		Lead, Total	2.1 u	UG/L	2.1	1.0
		Selenium, Total	3.7 u	UG/L	3.7	1.0
		Vanadium, Total	0.60 u	UG/L	0.60	1.0
		Zinc, Total	0.81	UG/L	0.80	1.0

Recra LabNet - Lionville

INORGANICS METHOD BLANK DATA SUMMARY PAGE 09/22/99

CLIENT: TNU-HANFORD B99-085 RECRA LOT #: 9908L851

WORK ORDER: 10985-001-001-9999-00

SAMPLE	SITE ID	ANALYTE	RESULT		UNITS	REPORTING LIMIT	DILUTION FACTOR
BLANK1	99L0594-MB1	Silver, Total	1.3		UG/L	1.0	1.0
		Arsenic, Total	3.3	u	UG/L	3.3	1.0
		Barium, Total	0.51		UG/L	0.30	1.0
		Beryllium, Total	0.10	u	UG/L	0.10	1.0
		Cadmium, Total	0.30	u	UG/L	0.30	1.0
		Chromium, Total	0.80	u	UG/L	0.80	1.0
		Copper, Total	1.2	u	UG/L	1.2	1.0
		Nickel, Total	1.2	u	UG/L	1.2	1.0
		Lead, Total	2.1	u	UG/L	2.1	1.0
		Selenium, Total	3.8		UG/L	3.7	1.0
		Vanadium, Total	0.60	u	UG/L	0.60	1.0
		Zinc, Total	0.80	u	UG/L	0.80	1.0

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INORGANICS ACCURACY REPORT 09/22/99

CLIENT: TNU-HANFORD B99-085 RECRA LOT #: 9908L851

WORK ORDER: 10985-001-001-9999-00

SAMPLE	SITE ID	ANALYTE	SPIKED SAMPLE	INITIAL RESULT	SPIKED AMOUNT	%RECOV	DILUTION FACTOR(SPK)
-001	B0W679	Silver, Total	50.4	1.5	50.0	97.8	1.0
		Arsenic, Total	2050	4.2	2000	102.1	1.0
		Barium, Total	1960	0.70	2000	97.9	1.0
		Beryllium, Total	50.7	0.10u	50.0	101.4	1.0
		Cadmium, Total	50.6	0.30u	50.0	101.2	1.0
		Chromium, Total	200	0.80u	200	100.2	1.0
		Copper, Total	245	1.2 u	250	98.1	1.0
		Nickel, Total	505	1.3	500	100.7	1.0
		Lead, Total	505	2.1 u	500	101.1	1.0
		Selenium, Total	2060	3.7 u	2000	103.2	1.0
		Vanadium, Total	495	0.60u	500	99.0	1.0
		Zinc, Total	492	0.81	500	98.3	1.0

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INORGANICS PRECISION REPORT 09/22/99

CLIENT: TNU-HANFORD B99-085 RECRA LOT #: 9908L851

WORK ORDER: 10985-001-001-9999-00

SAMPLE	SITE ID	ANALYTE	INITIAL RESULT	REPLICATE	RPD	DILUTION FACTOR(REP)
-001REP	B0W679	Silver, Total	1.5	1.0 u	~~NC~~ 200	1.0
		Arsenic, Total	4.2	3.3 u	~~NC~~ 200	1.0
		Barium, Total	0.70	0.60	15.4	1.0
		Beryllium, Total	0.10u	0.10u	NC	1.0
		Cadmium, Total	0.30u	0.30u	NC	1.0
		Chromium, Total	0.80u	0.80u	NC	1.0
		Copper, Total	1.2 u	1.2 u	NC	1.0
		Nickel, Total	1.3	1.2 u	~~NC~~ 200	1.0
		Lead, Total	2.1 u	2.1 u	NC	1.0
		Selenium, Total	3.7 u	3.7 u	NC	1.0
		Vanadium, Total	0.60u	0.60u	NC	1.0
		Zinc, Total	0.81	0.80u	~~NC~~ 200	1.0

Corrections
NC 9/22/99

Recra LabNet - Lionville Laboratory
INORGANIC ANALYTICAL DATA PACKAGE FOR
TNU-HANFORD B99-085

DATE RECEIVED: 08/24/99 RFW LOT # :9908L851

CLIENT ID /ANALYSIS	RFW #	MTX	PREP #	COLLECTION	EXTR/PREP	ANALYSIS
B0W679						
SILVER, TOTAL	001	W	99L0594	08/19/99	08/27/99	08/31/99
SILVER, TOTAL	001 REP	W	99L0594	08/19/99	08/27/99	08/31/99
SILVER, TOTAL	001 MS	W	99L0594	08/19/99	08/27/99	08/31/99
ARSENIC, TOTAL	001	W	99L0594	08/19/99	08/27/99	08/31/99
ARSENIC, TOTAL	001 REP	W	99L0594	08/19/99	08/27/99	08/31/99
ARSENIC, TOTAL	001 MS	W	99L0594	08/19/99	08/27/99	08/31/99
BARIUM, TOTAL	001	W	99L0594	08/19/99	08/27/99	08/31/99
BARIUM, TOTAL	001 REP	W	99L0594	08/19/99	08/27/99	08/31/99
BARIUM, TOTAL	001 MS	W	99L0594	08/19/99	08/27/99	08/31/99
BERYLLIUM, TOTAL	001	W	99L0594	08/19/99	08/27/99	08/31/99
BERYLLIUM, TOTAL	001 REP	W	99L0594	08/19/99	08/27/99	08/31/99
BERYLLIUM, TOTAL	001 MS	W	99L0594	08/19/99	08/27/99	08/31/99
CADMIUM, TOTAL	001	W	99L0594	08/19/99	08/27/99	08/31/99
CADMIUM, TOTAL	001 REP	W	99L0594	08/19/99	08/27/99	08/31/99
CADMIUM, TOTAL	001 MS	W	99L0594	08/19/99	08/27/99	08/31/99
CHROMIUM, TOTAL	001	W	99L0594	08/19/99	08/27/99	08/31/99
CHROMIUM, TOTAL	001 REP	W	99L0594	08/19/99	08/27/99	08/31/99
CHROMIUM, TOTAL	001 MS	W	99L0594	08/19/99	08/27/99	08/31/99
COPPER, TOTAL	001	W	99L0594	08/19/99	08/27/99	08/31/99
COPPER, TOTAL	001 REP	W	99L0594	08/19/99	08/27/99	08/31/99
COPPER, TOTAL	001 MS	W	99L0594	08/19/99	08/27/99	08/31/99
NICKEL, TOTAL	001	W	99L0594	08/19/99	08/27/99	08/31/99
NICKEL, TOTAL	001 REP	W	99L0594	08/19/99	08/27/99	08/31/99
NICKEL, TOTAL	001 MS	W	99L0594	08/19/99	08/27/99	08/31/99
LEAD, TOTAL	001	W	99L0594	08/19/99	08/27/99	08/31/99
LEAD, TOTAL	001 REP	W	99L0594	08/19/99	08/27/99	08/31/99
LEAD, TOTAL	001 MS	W	99L0594	08/19/99	08/27/99	08/31/99
SELENIUM, TOTAL	001	W	99L0594	08/19/99	08/27/99	08/31/99
SELENIUM, TOTAL	001 REP	W	99L0594	08/19/99	08/27/99	08/31/99
SELENIUM, TOTAL	001 MS	W	99L0594	08/19/99	08/27/99	08/31/99
VANADIUM, TOTAL	001	W	99L0594	08/19/99	08/27/99	08/31/99
VANADIUM, TOTAL	001 REP	W	99L0594	08/19/99	08/27/99	08/31/99
VANADIUM, TOTAL	001 MS	W	99L0594	08/19/99	08/27/99	08/31/99
ZINC, TOTAL	001	W	99L0594	08/19/99	08/27/99	08/31/99
ZINC, TOTAL	001 REP	W	99L0594	08/19/99	08/27/99	08/31/99

Recra LabNet - Lionville Laboratory
INORGANIC ANALYTICAL DATA PACKAGE FOR
TNU-HANFORD B99-085

DATE RECEIVED: 08/24/99 RFW LOT # :9908L851

CLIENT ID /ANALYSIS	RFW #	MTX	PREP #	COLLECTION	EXTR/PREP	ANALYSIS
ZINC, TOTAL	001 MS	W	99L0594	08/19/99	08/27/99	08/31/99

LAB QC:

SILVER LABORATORY	LC1 BS	W	99L0594	N/A	08/27/99	08/31/99
SILVER, TOTAL	MB1	W	99L0594	N/A	08/27/99	08/31/99
ARSENIC LABORATORY	LC1 BS	W	99L0594	N/A	08/27/99	08/31/99
ARSENIC, TOTAL	MB1	W	99L0594	N/A	08/27/99	08/31/99
BARIUM LABORATORY	LC1 BS	W	99L0594	N/A	08/27/99	08/31/99
BARIUM, TOTAL	MB1	W	99L0594	N/A	08/27/99	08/31/99
BERYLLIUM LABORATORY	LC1 BS	W	99L0594	N/A	08/27/99	08/31/99
BERYLLIUM, TOTAL	MB1	W	99L0594	N/A	08/27/99	08/31/99
CADMIUM LABORATORY	LC1 BS	W	99L0594	N/A	08/27/99	08/31/99
CADMIUM, TOTAL	MB1	W	99L0594	N/A	08/27/99	08/31/99
CHROMIUM LABORATORY	LC1 BS	W	99L0594	N/A	08/27/99	08/31/99
CHROMIUM, TOTAL	MB1	W	99L0594	N/A	08/27/99	08/31/99
COPPER LABORATORY	LC1 BS	W	99L0594	N/A	08/27/99	08/31/99
COPPER, TOTAL	MB1	W	99L0594	N/A	08/27/99	08/31/99
NICKEL LABORATORY	LC1 BS	W	99L0594	N/A	08/27/99	08/31/99
NICKEL, TOTAL	MB1	W	99L0594	N/A	08/27/99	08/31/99
LEAD LABORATORY	LC1 BS	W	99L0594	N/A	08/27/99	08/31/99
LEAD, TOTAL	MB1	W	99L0594	N/A	08/27/99	08/31/99
SELENIUM LABORATORY	LC1 BS	W	99L0594	N/A	08/27/99	08/31/99
SELENIUM, TOTAL	MB1	W	99L0594	N/A	08/27/99	08/31/99
VANADIUM LABORATORY	LC1 BS	W	99L0594	N/A	08/27/99	08/31/99
VANADIUM, TOTAL	MB1	W	99L0594	N/A	08/27/99	08/31/99
ZINC LABORATORY	LC1 BS	W	99L0594	N/A	08/27/99	08/31/99
ZINC, TOTAL	MB1	W	99L0594	N/A	08/27/99	08/31/99

RECRA LabNet Use Only

9908L851

Custody Transfer Record/Lab Work Request

Page 1 of 1

RECRA LabNet

ALL FIELD PERSONNEL: COMPLETE ONLY SHADED AREAS

(8) ~~perrone~~ ~~wet lab~~ metals dig.

Client TNU-Hanford B99-085

Est. Final Proj. Sampling Date

Project # 10985-001-001-9999-00

Project Contact/Phone #

RECRA Project Manager OJ

QC spec Del std TAT 30 day

Date Rec'd 8/24/99 Date Due 9/23/99

Account #

	VOA	BNA	Pest/PCB	Herb				Metal	CN		
Refrigerator #	1	6									6
#/Type Container Liquid	3g	2g			W/VOA						2p
#/Type Container Solid											
Volume Liquid	40	Ltr									Ltr
Volume Solid											
Preservatives	HCl	-									HNO3
RECRA LabNet Use Only	0224H	0225H			05CSC			Met(1)		Ang(1)	1N3N8 / 1NH3N

MATRIX CODES: S - Soil; SE - Sediment; SO - Solid; SL - Sludge; W - Water; O - Oil; A - Air; DS - Drum Solids; DL - Drum Liquids; L - EP/TCLP Leachate; WI - Wipe; X - Other; F - Fish

Lab ID	Client ID/Description	MS	MSD	Matrix	Date Collected	Time Collected	VOA	BNA	Pest/PCB	Herb				Metal			
001	BØW679			W	8/19/99	0715	✓	✓			✓			✓		⊗	✓
002	BØW680			W	↓	0510	✓										

Run Matrix QC

Special Instructions:

saf # B99-085

8/27/99 added Be to metals per client

COMPOSITE WASTE

DATE/REVISIONS: Logged 8/26/99 - run from pres. bottle

Ang(1) = (ICCL, ICFL, ICNO2, ICNO3, ICPO4)

2. ICSO4, ISFD, IPH - not logged

3. improperly preserved bottle.

met(1) = As, Ba, Cd, Cr, Cu, Pb, Ni, Se,

5. Ag, U, Zn, Be

* 6. 4235795286O2

RECRA LabNet Use Only

Samples were: 1) Shipped ✓ or Hand Delivered ___

Airbill # *

2) Ambient or (Chilled)

3) Received in Good Condition (Y) or N

4) Labels Indicate Properly Preserved Y or (N)

5) Received Within Holding Times Y or (N)

COC Tape was:

1) Present on Outer Package (Y) or N

2) Unbroken on Outer Package (Y) or N

3) Present on Sample (Y) or N

4) Unbroken on Sample (Y) or N

COC Record Present Upon Sample Rec't (Y) or N

Cooler Temp. 3.7 °C

Relinquished by	Received by	Date	Time	Relinquished by	Received by	Date	Time
FedEx	Janson	8/24/99	0930		REWRITTEN / ORIGINAL		

Discrepancies Between Samples Labels and COC Record? Y or (N)

NOTES:

ICNO2, ICNO3, ICPO4, IPH mit

Bechtel Hanford Inc.	851	CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST	B99-085-01	Page 1 of 1

Collector Doug Bowers	**Company Contact** Chris Cearlock / **Telephone No.** 372-9574	**Project Coordinator** TRENT, SJ	**Price Code** 7N / **Data Turnaround** 45 Days
Project Designation 200 Area Source characterization - 200-CW-1 OU - QC Sa	**Sampling Location** 200 East	**SAF No.** B99-085	
Ice Chest No. 96 006	**Field Logbook No.** EL-1511	**Method of Shipment** Federal Express	
Shipped To ~~TMA~~/RECRA ~~A70~~ 8-19-99	**Offsite Property No.** A990223	**Bill of Lading/Air Bill No.** 423579528602 -3.7	
		COA B20CW1 671C	

POSSIBLE SAMPLE HAZARDS/REMARKS

Special Handling and/or Storage

			Preservation	Cool 4C	H2SO4 to pH <2 Cool 4C	HNO3 to pH <2	HCl to pH <2 Cool 4C	HNO3 to pH <2						
			Type of Container	aG	P	P	aGs*	P						
			No. of Container(s)	2	2	2	3	3						
			Volume	1000mL	1000mL	1000mL	40mL	500mL						
SAMPLE ANALYSIS				Semi-VOA - 8270A (TCL)	See item (1) in Special Instructions.	Gross Alpha; Gross Beta	VOA - 8260A (TCL); VOA - 8260A (Add-On) (1-Propanol, Ethanol)	See item (2) in Special Instructions.						
Sample No.	**Matrix ***	**Sample Date**	**Sample Time**											
B0W679	Water	8-19-99	0715	X	X		X	X						
B0W680	Water	8-19-99	0510				X							

CHAIN OF POSSESSION — Sign/Print Names

Relinquished By	Date/Time	Received By	Date/Time
Brent Porter	8/19/99 15:00	Refer 1A	8/19/99 15:00
REF 1A	82399 1100	SJones [signature]	82399 1100
SJones [signature]	82399 1100	FED EX	
Fedex		Jonson	8/24/99 0930

SPECIAL INSTRUCTIONS
See Chain of Custody comments on SAF for special instructions.

(1) NO2/NO3 - 353.1; IC Anions - 300.0 (Chloride, Fluoride, Nitrate, Nitrite, Phosphate, Sulfate); Ammonia - 350.3; Sulfides - 9030; pH (Water) - 9040
(2) ICP Metals - 6010A (Supertrace) (Arsenic, Barium, Cadmium, Chromium, Copper, Lead, Nickel, Selenium, Silver, Vanadium, Zinc)

COLLECTOR UNAVAILABLE TO SIGN COC

From non rad area

Matrix *
Soil
Water
Vapor
Other Solid
Other Liquid

LABORATORY SECTION	Received By	Title	Date/Time
FINAL SAMPLE DISPOSITION	Disposal Method	Disposed By	Date/Time

RECRA LabNet
a division of Recra Environmental, Inc.
Virtual Laboratories Everywhere

Recra LabNet Philadelphia
Analytical Report

Client : TNU-HANFORD B99-085
RFW# : 9908L851
SDG# : H0500
SAF# : B99-085

W.O. # : 10985-001-001-9999-00
Date Received: 08-24-99

INORGANIC CASE NARRATIVE

1. This narrative covers the analyses of 1 water sample.

2. The sample was prepared and analyzed in accordance with the methods indicated on the attached glossary.

3. Sample holding times as required by the method and/or contract were met with the exception of Nitrate, Nitrite and Phosphate which were received past hold.

4. The cooler temperature was recorded on the chain-of-custody.

5. The method blanks were within method criteria.

6. The Laboratory Control Samples (LCS) were within the laboratory control limits. The duplicate LCS were within the 20% Relative Percent Difference (RPD) control limit.

7. The matrix spike recoveries were within the 75-125% control limits with the exception of Nitrite recovery which was below the control limits and Sulfate which was above the limits.

8. The replicate analyses were within the 20% RPD control limit with the exception of Phosphate and Sulfate.

9. Poor matrix spike recoveries and replicate reproducibility may be attributed to the analyses being performed using improperly preserved samples. Chloride, Fluoride, Phosphate, Nitrite and Nitrate were analyzed from a sulfuric acid preserved bottle and Sulfate was analyzed from a nitric acid preserved bottle; the method used for these analyses states the requirement of an unpreserved sample matrix.

Pat E

J. Michael Taylor
Vice President
Philadelphia Analytical Laboratory

9-29-99
Date

njp\i08-851

13 10/21/99

208 Welsh Pool Road • Lionville, PA 19341-1333 • (610) 280-3000 • Fax (610) 280-3041

Recra LabNet Philadelphia Sample Discrepancy Report (SDR) SDR #: PHM220

Initiator: Odette Johnson RFW Batch: 9908285 Parameter:
Date: 8/25/99 Samples: -001 Matrix: Water
Client: TNU Hanford Method: SW846/MCAWW/CLP/ Prep Batch:
B97085

1. Reason for SDR

a. **COC Discrepancy** __ Tech Profile Error __ Client Request __ Sampler Error on C-O-C __ Transcription Error __ Wrong Test Code __ Other _____

b. **General Discrepancy**

__ Missing Sample/Extract __ Container Broken __ Wrong Sample Pulled __ Label ID's Illegible
__ Hold Time Exceeded __ Insufficient Sample ✓ Preservation Wrong __ Received Past Hold
__ Improper Bottle Type __ Not Amenable to Analysis

Note: Verified by [Log-In] or [Prep Group] (circle)...signature/date: _____

c. **QC Problem** (Include all relevant specific results; attach data if necessary)

2. Known or Probable Causes(s)

Sample BOW679 for Anions (Cl, Fl, SO4, PO4, NO2, NO3), Ammonia, Sulfide, pH rec'd NO2/NO3 preserved

3. Discussion and Proposed Action

__ Re-log
__ Entire Batch
__ Following Samples: _____
__ Re-leach
__ Re-extract
__ Re-digest
__ Revise EDD
__ Change Test Code to _____
__ Place On/Take Off Hold (circle)

Other Description:

per client log preserved sample for Anions (Cl, Fl, NO2, NO3, PO4); ammonia; NO2/NO3

Odette L. Johnson 8/25/99

4. Project Manager Instructions...signature/date: 8/25/99

✓ Concur with Proposed Action
__ Disagree with Proposed Action; See Instruction
✓ Include in Case Narrative
✓ Client Contacted:
Date/Person Kevin Johnson 8/25/99
__ Add
__ Cancel

5. Final Action...signature/date: 8/29/99

__ Verified re-[log][leach][extract][digest][analysis] (circle)
✓ Included in Case Narrative
__ Hard Copy COC Revised
__ Electronic COC Revised
__ EDD Corrections Completed

Other Explanation:

SFD: pH not analyzed
SO4 from HNO3 bottle
all others from H2SO4 bottle

When Final Action has been recorded, forward original to QA Specialist for distribution and filing.

Route	Distribution of Completed SDR	Route	Distribution of Completed SDR
__	X Initiator		__ Metals: Doughty
__	X Lab Manager: M. Taylor	(2)	__ Inorganic: Perrone
__	X Project Mgr: Stone/Carey/Schrenkel/Johnson	__	__ GC/LC: Schnell
(4)	X Section Mgr: Wesson/Daniels		__ MS: LeMin/Taylor
(3)	X QA (file): Racioppi	(1)	__ Log-in: Toder
__	__ Data Management: Feldman	__	__ Admin: Soos
__	__ Sample Prep: Schnell/Doughty/Kauffman	__	__ Other: _____

L-WI-006/E-03/99

Recra LabNet Philadelphia

WET CHEMISTRY

METHODS GLOSSARY FOR WATER SAMPLE ANALYSIS

	EPA /600	SW846	OTHER
Acidity	___ 305.1		
___Alkalinity ___Bicarbonate ___Carbonate	___ 310.1		
BOD	___ 405.1		___ 5210B (b)
Ion Chormatography:			
___Bromide ___✓Chloride ___✓Fluoride	___ 300.0	___ 9056	
___✓Nitrite ___✓Nitrate ___✓Phosphate	___ 300.0	___ 9056	
___✓Sulfate ___Formate ___Acetate ___Oxalate	___ 300.0	___ 9056	
Chloride	___ 325.2	___ 9251	
Chorine, Residual	___ 330.5 (mod)		
Cyanide, Amenable to Chorination	___ 335.2	___ 9010B	
Cyanide, Total	___ 335.2	___ 9010B ___ 9014	___ ILMO4.0 (e)
Cyanide, Weak Acid Dissociable		___	___ 412 (a) ___ 4500CN-I (b
COD	___ 410.4(mod)		___ 5220C (b)
Color	___ 110.2		
Corrosivity by Coupon		___ 1110(mod)	
Chromium VI		___ 7196A	___ 3500Cr-D (b)
Fluoride	___ 340.2		___ 4500-FC
Hardness, Calcium	___ 215.2		
Hardness, Total	___ 130.2		
Iodide			___ ASTM D19P202 (1)
Surfactant	___ 425.1		
___✓Nitrate-Nitrite ___Nitrate ___Nitrite	___✓353.2		
Ammonia	___✓350.3		
Total___ Kjeldahl ___ Organic Nitrogen	___ 351.4		
Total___ Organic ___ Inorganic Carbon	___ 415.1	___ 9060	
Oil & Grease	___ 413.1	___ 9070	
___ pH ___ pH; paper	___ 150.1	___ 9040B ___ 9041A	
Petroleum Hydrocarbons, Total Recoverable	___ 418.1		
Phenol	___ 420.1 ___ 420.2	___ 9065 ___ 9066	
___Ortho ___Total Phosphate	___ 365.2		___ 4500-P B ___ C
Salinity			___ 210A (a) ___ 2520 (b)
Settleable Solids	___ 160.5		
Sulfide	___ 376.1 ___ 376.2	___ 9030B/9034 (acid soluble)	
Reactive ___Cyanide ___Sulfide		___ Section 7.3	
Silica	___ 370.1		
Sulfite	___ 377.1		
Sulfate	___ 375.4	___ 9038	
Specific Conductance	___ 120.1	___ 9050A	
Specific Gravity			___ D5057-90 ___ 213E (a)
Synthetic Precipitation Leach	___ 1312		
Total ___Dissolved ___Suspended ___Solids	160 ___.1 ___.2 ___.3		
Total Organic Halides	___ 450.1	___ 9020B	
Turbidity	___ 180.1		
Volatile Solids:			
___Total ___Dissolved ___Suspended	___ 160.4		
Other:		**Method:**	

METHOD REFERENCES AND DATA QUALIFIERS

DATA QUALIFIERS

U = Indicates that the parameter was not detected at or above the reported limit. The associated numerical value is the sample detection limit.

* = Indicates that the original sample result is greater than 4x the spike amount added.

ABBREVIATIONS

MB = Method or Preparation Blank.
MS = Matrix Spike.
MSD = Matrix Spike Duplicate.
REP = Sample Replicate
LC = Laboratory Control Sample.
NC = Not calculated.

A suffix of -R, -S, or -T following these codes indicate a replicate, spike or sample duplicate analysis respectively.

ANALYTICAL WET CHEMISTRY METHODS

1. ASTM Standard Methods.

2. USEPA Methods for Chemical Analysis of Water and Wastes (USEPA 600/4-79-020).

3. Test Methods for Evaluating Solid Waste (USEPA SW-846).

a. Standard Methods for the Examination of Water and Waste, 16 ed., (1989).

b. Standard Methods for the Examination of Water and Waste, 17 ed., (1983)

c. Method of Soil Analysis, Part 1, Physical and Mineralogical Methods, 2nd. Ed. (1986)

d. Method of Soil Analysis, Part 2, Chemical and Microbiological Properties, Am. Soc. Agron., Madison, WI (1965)

e. USEPA Contract Laboratory Program, Statement of Work for Inorganic Analysis.

f. Code of Federal Regulations.

Recra LabNet - Lionville

INORGANICS DATA SUMMARY REPORT 09/29/99

CLIENT: TNU-HANFORD B99-085 RECRA LOT #: 9908L851

WORK ORDER: 10985-001-001-9999-00

SAMPLE	SITE ID	ANALYTE	RESULT	UNITS	REPORTING LIMIT	DILUTION FACTOR
-001	B0W679	Chloride by IC	0.25 u	MG/L	0.25	1.0
		Fluoride by IC	0.50 u	MG/L	0.50	1.0
		Nitrite by IC	0.35	MG/L	0.25	1.0
		Nitrate by IC	0.25 u	MG/L	0.25	1.0
		Phosphate by IC	0.88	MG/L	0.25	1.0
		Sulfate by IC	0.66	MG/L	0.25	1.0
		Nitrate Nitrite	0.02 u	MG-N/L	0.02	1.0
		Ammonia, as N	0.10 u	MG/L	0.10	1.0

Recra LabNet - Lionville

INORGANICS METHOD BLANK DATA SUMMARY PAGE 09/29/99

CLIENT: TNU-HANFORD B99-085 RECRA LOT #: 9908L851

WORK ORDER: 10985-001-001-9999-00

SAMPLE	SITE ID	ANALYTE	RESULT	UNITS	REPORTING LIMIT	DILUTION FACTOR
BLANK10	99LIC073-MB1	Chloride by IC	0.25 u	MG/L	0.25	1.0
		Fluoride by IC	0.50 u	MG/L	0.50	1.0
		Nitrite by IC	0.25 u	MG/L	0.25	1.0
		Nitrate by IC	0.25 u	MG/L	0.25	1.0
		Phosphate by IC	0.25 u	MG/L	0.25	1.0
		Sulfate by IC	0.25 u	MG/L	0.25	1.0
BLANK10	99LN3A44-MB1	Nitrate Nitrite	0.02 u	MG-N/L	0.02	1.0
BLANK10	99LAMA33-MB1	Ammonia, as N	0.10 u	MG/L	0.10	1.0

Recra LabNet - Lionville

INORGANICS ACCURACY REPORT 09/29/99

CLIENT: TNU-HANFORD B99-085 RECRA LOT #: 9908L851

WORK ORDER: 10985-001-001-9999-00

SAMPLE	SITE ID	ANALYTE	SPIKED SAMPLE	INITIAL RESULT	SPIKED AMOUNT	%RECOV	DILUTION FACTOR(SPK)
-001	B0W679	Chloride by IC	4.4	0.00	5.0	88.0	1.0
		Fluoride by IC	11.8	0.00	10.0	117.7	1.0
		Nitrite by IC	3.6	0.35	5.0	65.9	1.0
		Nitrate by IC	5.1	0.25u	5.0	101.1	1.0
		Phosphate by IC	4.9	0.88	5.0	80.3	1.0
		Sulfate by IC	12.4	0.66	5.0	234.1	1.0
		Ammonia, as N	1.1	0.10u	1.0	108.0	1.0
BLANK10	99LIC073-MB1	Chloride by IC	4.8	0.25u	5.0	95.5	1.0
		Fluoride by IC	10.4	0.50u	10.0	103.6	1.0
		Nitrite by IC	4.8	0.25u	5.0	96.5	1.0
		Nitrate by IC	4.9	0.25u	5.0	97.3	1.0
		Phosphate by IC	4.9	0.25u	5.0	99.0	1.0
		Sulfate by IC	4.8	0.25u	5.0	95.4	1.0
BLANK10	99LN3A44-MB1	Nitrate Nitrite	0.50	0.02u	0.50	100.4	1.0
		Nitrate Nitrite MSD	0.50	0.02u	0.50	100.6	1.0
BLANK10	99LAMA33-MB1	Ammonia, as N	1.1	0.10u	1.0	110.0	1.0
		Ammonia, as N MSD	1.1	0.10u	1.0	110.0	1.0

Recra LabNet - Lionville

INORGANICS DUPLICATE SPIKE REPORT 09/29/99

CLIENT: TNU-HANFORD B99-085 RECRA LOT #: 9908L851

WORK ORDER: 10985-001-001-9999-00

SAMPLE	SITE ID	ANALYTE	SPIKE#1 %RECOV	SPIKE#2 %RECOV	%DIFF
BLANK10	99LN3A44-MB1	Nitrate Nitrite	100.4	100.6	0.20
BLANK10	99LAMA33-MB1	Ammonia, as N	110.0	110.0	0.00

Recra LabNet - Lionville

INORGANICS PRECISION REPORT 09/29/99

CLIENT: TNU-HANFORD B99-085 RECRA LOT #: 9908L851

WORK ORDER: 10985-001-001-9999-00

SAMPLE	SITE ID	ANALYTE	INITIAL RESULT	REPLICATE	RPD	DILUTION FACTOR(REP)
-001REP	B0W679	Chloride by IC	0.25u	0.25u	NC	1.0
		Fluoride by IC	0.50u	0.50u	NC	1.0
		Nitrite by IC	0.35	0.30	12.9	1.0
		Nitrate by IC	0.25u	0.25u	NC	1.0
		Phosphate by IC	0.88	0.37	82.1	1.0
		Sulfate by IC	0.66	0.43	42.1	1.0
		Ammonia, as N	0.10u	0.10u	NC	1.0

Recra LabNet - Lionville Laboratory
INORGANIC ANALYTICAL DATA PACKAGE FOR
TNU-HANFORD B99-085

DATE RECEIVED: 08/24/99 RFW LOT # :9908L851

CLIENT ID /ANALYSIS	RFW #	MTX	PREP #	COLLECTION	EXTR/PREP	ANALYSIS
B0W679						
CHLORIDE BY IC	001	W	99LIC073	08/19/99	09/01/99	09/01/99
CHLORIDE BY IC	001 REP	W	99LIC073	08/19/99	09/01/99	09/01/99
CHLORIDE BY IC	001 MS	W	99LIC073	08/19/99	09/01/99	09/01/99
FLUORIDE BY IC	001	W	99LIC073	08/19/99	09/01/99	09/01/99
FLUORIDE BY IC	001 REP	W	99LIC073	08/19/99	09/01/99	09/01/99
FLUORIDE BY IC	001 MS	W	99LIC073	08/19/99	09/01/99	09/01/99
NITRITE BY IC	001	W	99LIC073	08/19/99	09/01/99	09/01/99
NITRITE BY IC	001 REP	W	99LIC073	08/19/99	09/01/99	09/01/99
NITRITE BY IC	001 MS	W	99LIC073	08/19/99	09/01/99	09/01/99
NITRATE BY IC	001	W	99LIC073	08/19/99	09/01/99	09/01/99
NITRATE BY IC	001 REP	W	99LIC073	08/19/99	09/01/99	09/01/99
NITRATE BY IC	001 MS	W	99LIC073	08/19/99	09/01/99	09/01/99
PHOSPHATE BY IC	001	W	99LIC073	08/19/99	09/01/99	09/01/99
PHOSPHATE BY IC	001 REP	W	99LIC073	08/19/99	09/01/99	09/01/99
PHOSPHATE BY IC	001 MS	W	99LIC073	08/19/99	09/01/99	09/01/99
SULFATE BY IC	001	W	99LIC073	08/19/99	09/01/99	09/01/99
SULFATE BY IC	001 REP	W	99LIC073	08/19/99	09/01/99	09/01/99
SULFATE BY IC	001 MS	W	99LIC073	08/19/99	09/01/99	09/01/99
NITRATE NITRITE	001	W	99LN3A44	08/19/99	09/09/99	09/09/99
AMMONIA	001	W	99LAMA33	08/19/99	09/03/99	09/03/99
AMMONIA	001 REP	W	99LAMA33	08/19/99	09/03/99	09/03/99
AMMONIA	001 MS	W	99LAMA33	08/19/99	09/03/99	09/03/99
LAB QC:						
CHLORIDE BY IC	MB1	W	99LIC073	N/A	09/01/99	09/01/99
CHLORIDE BY IC	MB1 BS	W	99LIC073	N/A	09/01/99	09/01/99
FLUORIDE BY IC	MB1	W	99LIC073	N/A	09/01/99	09/01/99
FLUORIDE BY IC	MB1 BS	W	99LIC073	N/A	09/01/99	09/01/99
NITRITE BY IC	MB1	W	99LIC073	N/A	09/01/99	09/01/99
NITRITE BY IC	MB1 BS	W	99LIC073	N/A	09/01/99	09/01/99
NITRATE BY IC	MB1	W	99LIC073	N/A	09/01/99	09/01/99
NITRATE BY IC	MB1 BS	W	99LIC073	N/A	09/01/99	09/01/99
PHOSPHATE BY IC	MB1	W	99LIC073	N/A	09/01/99	09/01/99
PHOSPHATE BY IC	MB1 BS	W	99LIC073	N/A	09/01/99	09/01/99

Recra LabNet - Lionville Laboratory
INORGANIC ANALYTICAL DATA PACKAGE FOR
TNU-HANFORD B99-085

DATE RECEIVED: 08/24/99 RFW LOT # :9908L851

CLIENT ID /ANALYSIS	RFW #	MTX	PREP #	COLLECTION	EXTR/PREP	ANALYSIS
SULFATE BY IC	MB1	W	99LIC073	N/A	09/01/99	09/01/99
SULFATE BY IC	MB1 BS	W	99LIC073	N/A	09/01/99	09/01/99
NITRATE NITRITE	MB1	W	99LN3A44	N/A	09/09/99	09/09/99
NITRATE NITRITE	MB1 BS	W	99LN3A44	N/A	09/09/99	09/09/99
NITRATE NITRITE	MB1 BSD	W	99LN3A44	N/A	09/09/99	09/09/99
AMMONIA	MB1	W	99LAMA33	N/A	09/03/99	09/03/99
AMMONIA	MB1 BS	W	99LAMA33	N/A	09/03/99	09/03/99
AMMONIA	MB1 BSD	W	99LAMA33	N/A	09/03/99	09/03/99

RECRA LabNet Use Only: 9908L851

Custody Transfer Record/Lab Work Request

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RECRA LabNet

ALL FIELD PERSONNEL: COMPLETE ONLY SHADED AREAS

(8) perrone wet lab

Client: TNU-Hanford B99-085

Est. Final Proj. Sampling Date: *

Project #: 10985-001-001-9999-00

Project Contact/Phone #: *

RECRA Project Manager: AJ

QC: spec Del: std TAT: 30 day

Date Rec'd: 8/24/99 Date Due: 9/23/99

Account #:

		1	6								6			
Refrigerator #		1	6								6			
#/Type Container	Liquid	3g	2g			W/VOA					2P			
	Solid													
Volume	Liquid	40	Ltr								Ltr			
	Solid													
Preservatives		HCl	-								HNO3			
ANALYSES REQUESTED		ORGANIC: VOA	BNA	Pest/PCB	Herb			INORG: Metal	CN					
RECRA LabNet Use Only		0224H	0225H			05C5C		Met(1)		Anz(1)	1N3N8 1NH3N			

012

MATRIX CODES: S - Soil, SE - Sediment, SO - Solid, SL - Sludge, W - Water, O - Oil, A - Air, DS - Drum Solids, DL - Drum Liquids, L - EP/TCLP Leachate, WI - Wipe, X - Other, F - Fish

Lab ID	Client ID/Description	MS	MSD	Matrix	Date Collected	Time Collected	VOA 0224H	BNA 0225H	Pest/PCB	Herb	05C5C		Met(1)	CN	Anz(1)	1N3N8 1NH3N
001	BØW679			W	8/19/99	0715	✓	✓			✓		✓		⊗	✓
002	BØW680			W	↓	0510	✓									

Run Matrix QC

Special Instructions:

saf # B99-085

COMPOSITE WASTE

DATE/REVISIONS:

Logged 8/26/99 - run from pres. bottle

1. Anz (1) = ICCL, ICFL, ICNO2, ICNO3, ICPO4,
2. ICSO4, ISFD, IPH - not logged
3. improperly preserved bottle.
4. met(1) = As, Ba, Cd, Cr, Cu, Pb, Ni, Se,
5. Ag, U, Zn
6. * 4935795286602

RECRA LabNet Use Only

Samples were: 1) Shipped ✓ or Hand Delivered ___

Airbill # *

2) Ambient or (Chilled)

3) Received in Good Condition (Y) or N

4) Labels Indicate Properly Preserved Y or (N)

5) Received Within Holding Times Y or (N)

COC Tape was:
1) Present on Outer Package (Y) or N
2) Unbroken on Outer Package (Y) or N
3) Present on Sample (Y) or N
4) Unbroken on Sample (Y) or N

COC Record Present Upon Sample Rec't (Y) or N

Cooler Temp. 3.7 °C

Discrepancies Between Samples Labels and COC Record? Y or (N)

NOTES:

ICNO2, ICNO3, ICPO4, IPH out

Relinquished by	Received by	Date	Time
FedEx	Janson	8/24/99	0930

Relinquished by	Received by	Date	Time
	REWRITTEN		
	ORIGINAL		

Bechtel Hanford Inc.	851	CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST	B99-085-01	Page 1 of 1

Collector: Doug Bowers	Company Contact: Chris Cearlock — Telephone No.: 372-9574	Project Coordinator: TRENT, SJ	Price Code: 7N — Data Turnaround: 45 Days
Project Designation: 200 Area Source characterization - 200-CW-1 OU - QC Sa	Sampling Location: 200 East	SAF No.: B99-085	
Ice Chest No.: 96 006	Field Logbook No.: EL-1511	Method of Shipment: Federal Express	
Shipped To: ~~TMA~~/RECRA ~~H70~~ 8-19-99	Offsite Property No.: A990223	Bill of Lading/Air Bill No.: 423579528602 -3.7	
		COA: B20CW1 671C	

POSSIBLE SAMPLE HAZARDS/REMARKS	Preservation	Cool 4C	H2SO4 to pH <2 Cool 4C	HNO3 to pH <2	HCl to pH <2 Cool 4C	HNO3 to pH <2					
	Type of Container	aG	P	P	aGs*	P					
	No. of Container(s)	2	2	2	3	3					
Special Handling and/or Storage	Volume	1000mL	1000mL	1000mL	40mL	500mL					
SAMPLE ANALYSIS		Semi-VOA - 8270A (TCL)	See item (1) in Special Instructions.	Gross Alpha; Gross Beta	VOA - 8260A (TCL); VOA - 8260A (Add-On) (1-Propanol, Ethanol)	See item (2) in Special Instructions.					
Sample No.	Matrix *	Sample Date	Sample Time								
B0W679	Water	8-19-99	0715	X	X		X	X			
B0W680	Water	8-19-99	0510				X				

CHAIN OF POSSESSION	Sign/Print Names	Relinquished By / Date/Time	Received By / Date/Time
		Brent Porter 8/19/99 15:00	Refer 1A 8/19/99 16:00
		REF 1A 82399 1100	JJONES 82399 1100
		JJONES 82399 1100	FED EX
		Jackson	Johnson 8/24/99 0930

SPECIAL INSTRUCTIONS

See Chain of Custody comments on SAF for special instructions.

(1) NO_2/NO_3 - 353.1; IC Anions - 300.0 (Chloride, Fluoride, Nitrate, Nitrite, Phosphate, Sulfate); Ammonia - 350.3; Sulfides - 9030; pH (Water) - 9040
(2) ICP Metals - 6010A (Supertrace) (Arsenic, Barium, Cadmium, Chromium, Copper, Lead, Nickel, Selenium, Silver, Vanadium, Zinc)

COLLECTOR UNAVAILABLE TO SIGN COC

From non rad area

Matrix *: Soil; Water; Vapor; Other Solid; Other Liquid

LABORATORY SECTION	Received By	Title	Date/Time
FINAL SAMPLE DISPOSITION	Disposal Method	Disposed By	Date/Time